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HOLTZAPFFEL & Co.,

N^o. 64,

CHARING CROSS, LONDON,

ENGINE, LATHE, & TOOL MANUFACTURERS,

AND

GENERAL MACHINISTS,

To the Hon. Board of Ordnance, the Hon. East India Company, &c., &c.

TURNING, PLANING, SCREW AND WHEEL CUTTING, FRAMING, &c.
IN METAL AND WOOD TO DRAWINGS OR MODELS.

Amateurs

ARE SUPPLIED WITH THE APPARATUS, TOOLS, AND MATERIALS, THAT ARE REQUIRED
IN TURNING AND THE MECHANICAL ARTS GENERALLY, AND ARE
ALSO PRACTICALLY INSTRUCTED IN THEIR USE.

Tools and Instruments for

ARCHITECTS.	COPPERSMITHS.	MASONs.	SEAL ENGRAVERS.
BOOKBINDERS.	ENGINEERS.	MILLWRIGHTS.	SILVERSMITHS.
BRUSHMAKERS.	ENGRAVERS.	MODELLERS.	SMITHS.
BUILDERS.	GARDENERS.	OPTICIANS.	SURVEYORS.
CABINETMAKERS.	GUNMAKERS.	PAINTERS.	TINSMITHS.
CARPENTERS.	HARNESSMAKERS.	PLASTERERS.	TURNERS.
CARVERS.	HATTERS.	PLUMBERS.	WATCHMAKERS.
CLOCKMAKERS.	JEWELLERS.	PRINTERS.	WHEELWRIGHTS.
COACHMAKERS.	MACHINISTS.	SADDLERS.	WIREDRAWERS.

Cutlery of every Description.

AN EXTENSIVE ASSORTMENT OF
TOOL CHESTS, DRESSING CASES, DRAWING AND MEASURING INSTRUMENTS,
PRINTING PRESSES, GARDEN TOOLS, &c.

MANUFACTORY, 127, LONG ACRE.

FOREIGN ORDERS, RECEIVED EITHER DIRECT OR THROUGH AGENCY HOUSES, EXECUTED
WITH EXACTNESS AND DISPATCH.

STEREOTYPE IMPRESSION. PRICE SIXPENCE.

1849.

N^o. 12822.

& Catalogues Sold by

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LONDON :
BRADBURY AND EVANS, PRINTERS, WHITEFRIARS.



ADVERTISEMENT.

HOLTZAPFFEL & Co., in presenting to the public their new and enlarged Catalogue, feel it to be their first duty, to return their most grateful thanks to their numerous and distinguished Customers, for the kind support their house has experienced during a period which, at this present time, extends to half a century, the business having been established in 1794.

A printed Catalogue was first issued by H. & Co. about thirty years back—the second impression of this Catalogue was greatly enlarged, the articles were then arranged alphabetically, and numbered from 1 to 740—and in three successive reprints, many additions were made to their earlier Catalogues, so as to include the more important of the mechanical tools, and turning machinery, known at the respective periods. In order to retain the usefulness of every impression, the introductions were in each case distinguished by letters attached to the original numbers, as 330 A, 330 B, &c. ; so that, a reference to the number and letter in any of the copies, accurately distinguished the particular article alluded to. Certain inconveniences were, however, found to be inseparable from this attempt, strictly to maintain an alphabetical and numerical scheme.

The difficulties of distinct and perspicuous arrangement, continually increased with every introduction of new articles; and as many such had now to be inserted, it was considered desirable, with a new epoch to commence a new Catalogue, in which, although the principal arrangement is alphabetical, the subsidiary parts are classified in a manner denoted by the several headings introduced in *italics*. The descriptions are also given more at length, and are interspersed with numerous explanatory notes, which it is hoped will be found useful.

To avoid interfering with the usefulness of the old Catalogues, the

present carries a new series of numbers, commencing at 1000, and ending at 2078, so that confusion with the old numbers cannot possibly occur; and to avoid the prospective inconvenience, of the breaking up of this present series of numbers by future additions to the list, it is intended, as occasion may require, to publish supplements; the first of which will be commenced with the number next following, or 2079.

The prices of the several articles are partially annexed in two columns, the lowest and highest of the ordinary prices being in general quoted. When only one price appears, it is meant to express that only one article of that particular description is at present made. It is to be further observed, that the desire to introduce prices, so far as possible, has induced H. & Co. to attach some few of them rather from surmise than experience; and, consequently, a little latitude may occasionally be required.

It is a matter of some regret to Holtzapffel & Co. that they could not entirely fill out the columns with prices; but they have found, from long experience, that, in numerous cases, the fixed prices have acted with inconvenience; because the articles to which they referred were, in many instances, more or less open to changes of construction, which changes necessarily influenced their cost; and, therefore, the obvious tendency of such fixed prices was, to cripple the emendation of the several articles so particularised. These remarks apply more particularly to the Lathe Apparatus, described on pages 35 to 44.

So far as possible to remedy this inconvenience, H. & Co. will be happy to supply, on application, the prices of any of the articles specified, agreeably to the several constructions at the time of the inquiry; and they will be also happy to furnish any additional explanations that the Catalogue may not be found to convey.

In selecting those parts of their stock which they do not manufacture, H. & Co. employ the utmost care to obtain none but those which are of the very best workmanship; and in the extensive portion of the stock, the work of their own manufactory, they aim at combining the advantages of their former experience, with the adoption of every improvement, in the application of machinery to manufactures, likely to insure or to increase accuracy of result.

A D D R E S S.

It is a source of extreme gratification to H. & Co., to notice the extent to which the Mechanical Arts, and more particularly that of Turning, are pursued; the Turning Lathe, in its various modifications, assisted by its appendages of mechanism, being at present absolutely essential to some stage of every manufacture.

The cultivation of Mechanics by Gentlemen who have the advantages of general acquirements and of leisure, has given rise to many ideas and suggestions on their part, which have led to valuable practical improvements. H. & Co. have a large share of these obligations to acknowledge, but it would obviously be extremely difficult to particularise them, as the ultimate form of any successful piece of mechanism is commonly the result of *many* successive modifications.

In some cases H. & Co. have been furnished by Gentlemen with the theoretical and general sketch of machines, the details of construction being entrusted partially, or wholly, to themselves; and in others they have merely carried into practical effect the finished designs.

To each of the Gentlemen by whom they have been favoured with communications, as well as to those whose names appear in this Catalogue, they beg to return their most sincere thanks, with the assurance that it would give them great pleasure to make further additions to this list under similar circumstances.

The public is respectfully invited to inspect H. & Co.'s ware-rooms, where may be seen the principal part of the tools and machines specified in this list; but of these numerous apparatus, some few are only made to order, and others cannot be always in readiness; consequently, drawings of nearly the whole are in preparation, to supply this inevitable deficiency. The drawings are often found to assist foreign Gentlemen, and others, who experience inconvenience from being unacquainted with the technical names of the various apparatus.

Amateurs who desire to receive instruction in Turning or Mechanical Manipulation generally, can receive lessons from H. & Co.'s experienced workmen, either in rooms fitted up for the purpose at Charing Cross, or at their private residences, in town or country.

No. 64, CHARING CROSS,
October, 1844.

Eccentric Chuck.



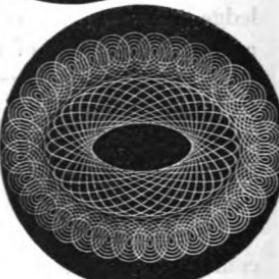
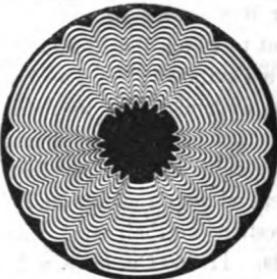
Oval Chuck.



Segment Engine.

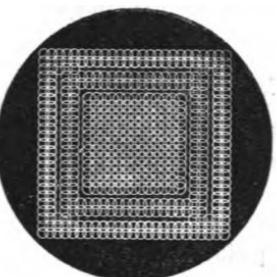


Rose Engine.

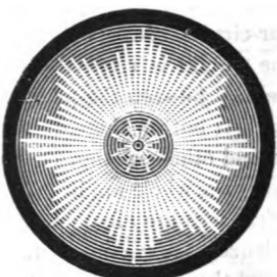


IBBETSON'S Geometric Chuck.—Parts First, Second, and Third.

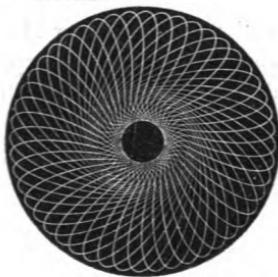
Ibbetson's Compound Eccentric Chuck.



Straight Line Line Chuck.



One Oval and one Eccentric Movement.



Two Eccentric Movements.

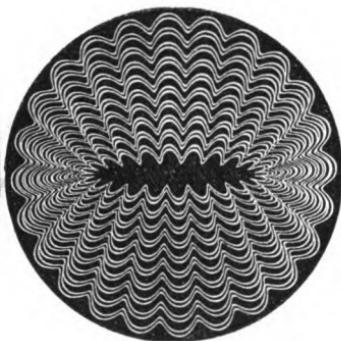


HOLTZAPPFEL & Co.'s Compound Oval and Eccentric Chuck.

Eccentric Chuck with the Rose Engine.

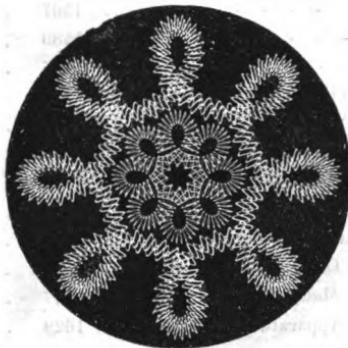


Oval Chuck with the Rose Engine

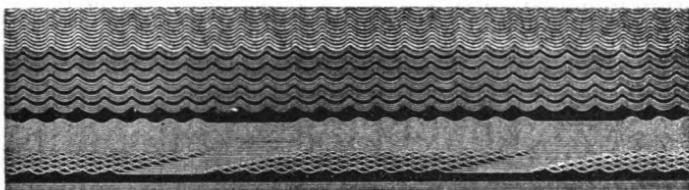


Each Specimen on the other side is the result of a different Apparatus.
This page shows the effect of the same Apparatus, when employed in conjunction with the Rose Engine.

Although only one Specimen of each individual Apparatus is given, yet the Patterns, which may be considered almost endless, depend on the skill and taste of the Operator.



Geometric Chuck combined with the Rose Engine



Straight Line Chuck combined with the Rose Engine.

Two Eccentric Movements.



One Oval and one Eccentric Movement.



HOLTZAPFFEL & Co.'s Compound Oval and Eccentric Chuck with the Rose Engine.

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GENERAL CATALOGUE

OF

Lathes, Machines, Instruments, & Tools,

MANUFACTURED AND SOLD BY

HOLTZAPFFEL AND CO.,

64, CHARING CROSS, AND 127, LONG ACRE, LONDON.

REVISED AND ENLARGED, 1844.

No.	Description	From			To			
		£	s.	d.	£	s.	d.	
1000	ADZES. Carpenters, Coopers, and Shipwrights adzes. - -	Each	0	2	0	0	4	0
1001	ANVILS. Small anvils, of the Ordnance pattern, with shanks for the bench or vice ; some with 2 cutters - - -	Each	0	13	0	0	16	0
1002	— Smiths anvils, from 20 to 400 lbs. weight - - -	The lb.	0	1	0	0	6	0
1003	— Smiths anvils, with complete sets of Forging Tools, or com- plete sets of Farriers' Tools - - - -	The set	6	0	0	14	0	0
1004	— Tripod anvil stands of cast iron, with springs to reduce the concussion arising from the hammer. - - - -	Each	2	10	0	3	10	0
1005	AUGERS. Shell augers, from $\frac{1}{2}$ to $1\frac{1}{2}$ inch, short with tange - -	—	0	0	7	0	1	9
1006	— Shell augers, long, with eyes - - - -	—	0	0	9	0	3	0
1007	— Screw augers - - - -	—	0	1	6	0	4	6
1008	— Improved American screw augers, from $\frac{1}{2}$ to 2 inch, with worms soldered on, and shifting cutters - - - -	Each	0	2	0	0	6	0
1009	— Screw and Shell augers, in sets of 6 to 12, and from $\frac{1}{2}$ to $1\frac{1}{2}$ -inch diameter, to fit handles of beech-wood or hard- wood, with spring sockets. - - - -	The set	1	7	0	1	18	0
1010	AWLS. Brad, flooring, and saddlers awls. - - -	The dozen	0	0	8	0	1	0
1011	— Brad-awls in beech-wood or hard-wood handles. - - -	—	0	2	6	0	6	0
1012	Brad-awls, sets of 6 to 12, contained in socket handles of horn, hard-wood, &c. - - - -	The set	0	4	6	0	7	6
1013	AXES. Bench, blocking, broad, falling, hedge, ship, wedge, and wheelers' axes. Handles charged extra - - -	The lb.	0	1	0	0	2	6
1014	— Falling axes of American pattern, and variously handled. H. and Co.'s make - - - -	Each	0	10	0	0	16	0
1015	— Single-hand axes, similar to the last but smaller ; used for felling small trees, and for trimming plantations - -	Each	0	8	0	0	10	0
1016	BABBAGE'S (C., Esq.), cutter bars, for turning metal, with the slide rest. (See No. 1622.)	—	—	—	—	—	—	—
1017	BAKEWELL'S angle meter, for geological purposes. (See No. 1399.) - - - -	Each	2	2	0	2	12	6
1018	— Bakewell's Geological Hammer. (See No. 1397.) - -	—	0	7	0	0	9	0

No.		From £ s. d.	To £ s. d.
1019	BEAK IRONS of various forms and sizes, for the tail-vice, the work bench, or for wooden blocks - - - - - <i>Each</i>	0 2 6	1 10 0
1020	BED WRENCHES of common construction - - - - -	0 1 6	0 2 6
1021	— — — — — with shifting sockets of different sizes - - - - -	0 4 6	0 5 6
1022	— — — — — in the form of a cross, with 3 square sockets, and 1 screw-driver - - - - - <i>Each</i>	0 5 0	0 6 0
1023	BENCHES of beech-wood and mahogany, made to order, with or without complete sets of tools, such as are used by cabinet-makers, carvers, clock-makers, dentists, jewellers, joiners, smiths, watch-makers, and other artizans.—(See also Planing Benches, Nos. 1715 to 1719.)		
1024	BEVILS for joiners and others.		
1025	— Joiners' bevils, with plain joints, 6 to 12 inch - - - - - <i>Each</i>	0 1 6	0 4 6
1026	— — — — — similar but plated - - - - -	0 2 0	0 6 0
1027	— — — — — with mortised blades - - - - -	0 2 6	0 9 0
1028	— QUARM's bevilling instrument for joiners; rewarded by the Society of Arts in 1843.		
1029	Bevils of various kinds, made entirely of metal, and generally without graduations - - - - - <i>Each</i>	0 4 0	0 12 0
1030	Bevils, with sliding blades and graduations, for the turner and general mechanist - - - - - <i>Each</i>		1 0 0
1031	Set bevils, with graduations, for setting the sliding-rest obliquely for turning cones - - - - - <i>Each</i>		1 0 0
1032	BLASTING TOOLS, for blasting the roots of trees, &c.; namely, a screw auger, a perforated screw plug, gun-metal tamping bar, (serving also as the wrench,) quick and slow matches, and pricker; all contained in a strong deal case, painted - - - - - <i>The set</i>		2 12 6
1033	BLOWPIPES, of brass, 6 to 15 inches long, of the ordinary kind, formed as conical tubes - - - - - <i>Each</i>	0 1 0	0 2 6
1034	Blowpipes of other kinds, with different jets or nozzles to screw on, and with reservoirs to collect the moisture from the breath - - - - - <i>Each</i>	0 5 0	0 16 0
1035	Blowpipe-lamps, for spirits of wine, oil, or tallow - - - - -	0 2 6	0 8 0
1036	Blowpipe-tables, with circular and other bellows, to be worked by the foot; for soldering, glass-blowing, and various small applications of heat - - - - - <i>Each</i>	2 10 0	0 6 0 0
	(See also the Forge, No. 1371.)		
1037	Sir John Robison's workshop or howitzer blowpipe, for employing a mixed stream of common air and carburetted hydrogen, or the ordinary street gas. The blowpipe is supplied with or without the flexible tubes, and pedestal or frame-work. Described in the "Mechanic's Magazine," for 1842, vol. 36, page 258 - - - - - <i>Each</i>	2 0 0	4 0 0
1038	BOOKBINDERS' TOOLS. The sewing press, cutting press, plough, cutting boards, backing boards, and the principal tools used in bookbinding, supplied either separately, or conveniently arranged in the same case that serves as the shaving-tub.		
1039	Bookbinders' stamps in brass or steel, with letters, figures, names, cyphers, ornaments, &c., to order.		
1040	BORING BITS for the lathe.		
1041	Cylinder bits, with or without handles, in sets of 8, below $\frac{1}{2}$ inch diam., and from 6 to 10 inches long, for boring small tubes, smoking-pipes, &c. - - - - - <i>The set</i>	0 7 6	0 10 6
1042	Cylinder bits, in hard-wood handles with brass centers, in sets of 12, from $\frac{1}{2}$ to $\frac{1}{4}$ inch diameter - - - - - <i>The set</i>		1 10 0
1043	Cylinder bits, made entirely of steel; namely:		
1044	Set of 12, from $\frac{1}{2}$ to $\frac{1}{4}$ inch diam., 4 to 7 long - - - - -		1 8 0
1045	— 12, — $\frac{1}{2}$ to $\frac{1}{4}$ 6 to 9 - - - - -		1 18 0
1046	— 12, — $\frac{1}{2}$ to 1 7 to 12 - - - - -		2 10 0

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.			From £ s. d.	To £ s. d.
	BORING BITS <i>continued.</i>			
1047	Sets of 4, from $1\frac{1}{2}$ to $1\frac{1}{2}$ inch diam., 12 to 15 long <i>The set</i> Any of the above cylinder bits, which constitute a complete series, may be had separately.		2 4 0	
1048	Cylinder bits for making models of the entire series of guns, howitzers, and mortars, on reduced scales. The set of boring tools consists of 2 long piercing and re-centering drills ; 2 long boring bars, with one shifting cutter and guide for every calibre ; 1 bar, with a cutter of the curvature required in every chamber ; and adjustable cutters for rounding the trunnions. The whole or any part of the entire series made to order, and of the particular scale desired.			
1049	Piercing drills, re-centering drills, rose bits, countersinks, and other boring tools for the lathe, made to order			
1050	BRACES AND BITS of various kinds.			
1051	Braces of beech-wood, with 12, 18, 24, 36, 42, and 48 bits, left black from the hardening	<i>The set</i>	0 16 0	1 15 0
1052	Braces of beech-wood, with brass plates on the sides, and with 12 to 48 bright or straw-coloured bits	<i>The set</i>	0 19 0	2 5 0
1053	Braces of ebony or rose-wood, plated with brass, and with 12 to 48 bright or straw-coloured bits	<i>The set</i>	1 10 0	2 10 0
1054	Braces of wood, smaller than usual, with and without bits, for pianoforte makers and others	<i>Each</i>	0 9 0	0 15 0
1055	Braces of iron, with 12 to 36 bright bits, for joiners' work, and general purposes	<i>The set</i>	1 0 0	1 10 0
1056	Braces of iron, for gun-makers, smiths, and others. <i>Each</i>		0 10 0	2 10 0
	The bits, drills, countersinks and cherries for the latter, are charged extra.			
1057	BRACE BITS of various kinds for joiners.			
1058	Center bits from $\frac{1}{8}$ to 2 inch		0 0 5	0 1 2
1059	FRANKLIN'S Expanding Center Bits. The set consists of 3 tools, that serve for holes of every diameter between $\frac{1}{8}$ inch and 2 inches. Rewarded by the Society of Arts, 1844	<i>The set</i>	0 4 6	0 7 6
1060	Expanding center bit, with bar and cutter, for cutting holes and disks in thin wood, from 2 to 8 in. diam. <i>Each</i>		0 10 0	0 15 0
1061	Countersinks for metal and wood		0 0 6	0 1 0
1062	Fluted bits of many kinds, known as shell, spoon, and gouge bits ; and also as brush, chair, dowelling, asash, and table bits	<i>Each</i>	0 0 5	0 1 6
1063	Nose bits or auger bits, under 6 inches long		0 0 5	0 0 9
1064	Nose bits, from 7 to 18 inches long		0 1 0	0 2 0
1065	Screw auger bits		0 1 6	0 2 6
1066	Taper bits or rimers ; half round, or with three, four, and five sides, for metal ; and fluted rimers for wood	<i>Each</i>	0 0 5	0 1 0
1067	Turn-screw or screw-driver bits		0 0 6	0 1 0
1068	BRAD PUNCHES, round and square, black and bright		0 0 2	0 0 4
1069	BRAND MARKS, with names, single letters, or devices, to order			
1070	BRASS, cast to patterns	<i>The lb.</i>		
1071	BREAST PLATES in iron or wood, with steel centers	<i>Each</i>	0 1 2	0 2 6
1072	BROACHES. Clock and watch-makers' polygonal, cylindrical and pivot broaches	<i>Each</i>	0 0 2	0 1 6
1073	Broaches from $1\frac{1}{2}$ to 12 inches long		0 0 2	0 6 0
1074	BRUNEL'S tube compasses. (See No. 1258.)		1 5	0 1 15 0
1075	BRUSHES. Straight brushes, for polishing ivory, metals, &c. <i>Each</i>		0 1 6	0 3 0
1076	Circular or wheel brushes, 2 to 6 inches diameter		0 0 9	0 4 6
1077	Circular brushes, with the bristles on the flat face of the disk, for lapidary work		0 14	0 1 4 0
1078	Scratch brushes of brass or steel, for cleaning files	<i>Each</i>	0 2	0 4 6
1079	Scratch brushes, made of strips of the material prepared for carding or combing cotton wool, fixed on wooden handles		0 2 0	0 3 0

No.			From £ s. d.	To £ s. d.
1080	BURNISHERS various, for engravers, watch-makers, and others, either with wooden handles or double-ended,	Each	0 1 0	0 2 6
1081	BUFF STICKS for polishing	- - - - -	0 0 4	0 1 0
1082	CALLIPERS of various kinds.			
	(A.— <i>Country made Callipers, for Joiners.</i>)			
1083	Plain callipers, 5 to 12 inch, black	- - - - -	The pair	0 1 6 0 5 0
1084	bright	- - - - -		0 2 0 0 7 0
1085	Wing callipers	black	- - - - -	0 2 0 0 7 0
1086	bright	- - - - -		0 2 3 0 9 0
1087	Spring callipers	black	- - - - -	0 2 0 0 4 6
1088	bright	- - - - -		0 2 6 0 5 6
	(B.— <i>Callipers of H. and Co.'s make, for General Purposes.</i>)			
1089	Single callipers of steel, with brass joints, 3 to 9 inch	The pair	0 5 0 0 12 0	
1090	Double, or in and outside callipers	- - - - -	0 6 0 0 15 0	
1091	Double callipers, with fixing screws	- - - - -	0 8 0 0 18 0	
1092	Double-side callipers	- - - - -	0 8 0 0 18 0	
1093	Proportional callipers, with fixed or shifting axes, for mechanical drawing, and for sculpture. (See No. 1273)	- - - - -	0 10 0 4 4 0	
1094	Callipers, with wide ends for screws	- - - - -	0 7 0 0 12 0	
1095	Calliper gages.—(See Gages, No. 1389.)			
1096	CARPET STRAINERS	- - - - -	Each	0 2 0 0 2 6
1097	CARVING TOOLS, Addis's and others in great variety	- - - - -	0 0 6 0 1 0	
1098	in sets of 12 to 36 tools, ground and handled	- - - - -	The set	0 15 0 2 10 0
1099	CATGUT for drill-bows, lathes, and machinery; of sizes not exceeding one quarter inch diameter	- - - - -	The hank	0 0 2 0 5 6
1100	Catgut from one quarter to one inch diameter, to order	- - - - -		
1101	CEMENT for turners	- - - - -	The stick	0 1 0
1102	Diamond cement for ivory	- - - - -	The bottle	0 3 0
1103	CHALK LINES, with or without reels	- - - - -	Each	0 0 2 0 1 6
1104	CHATER AND HAYWARD'S micrometer gage for glass, sheet-metal, &c.—(See No. 1392.)	- - - - -	Each	2 5 0
1105	CHESTERMAN'S spring tape measures.—(See No. 1653.)	- - - - -	0 4 0 1 10 0	
1106	CHESTERMAN and Bottom's patent wire tapes.—(See No. 1652.)	0 10 0 1 10 0		
1107	CHISELS. Firmer chisels, of cast steel, $\frac{1}{8}$ to $2\frac{1}{2}$ inch	- - - - -	Each	0 0 4 0 2 0
1108	— Firmer chisels, in sets of 12, from $\frac{1}{8}$ to 1 inch	- - - - -	The set	0 4 6
1109	— The above set handled in beech-wood	- - - - -		0 7 6
1110	— The above set handled in hard wood	- - - - -		0 12 0
1111	Coach-makers' chisels of cast steel, $\frac{1}{8}$ to 2 inches wide, and thick; without handles	- - - - -	Each	0 0 6 0 2 0
1112	Paring chisels, longer and thinner than firmer chisels, $\frac{1}{8}$ to 3 inch	- - - - -	Each	0 0 6 0 3 6
1113	Millwrights' chisels, longer and thicker than firmer chisels, $\frac{1}{8}$ to 3 inch	- - - - -	Each	0 0 6 0 4 6
1114	Socket chisels, $\frac{1}{8}$ to $2\frac{1}{2}$ inch	- - - - -	0 0 7 0 2 0	
1115	Mortise chisels, $\frac{1}{8}$ to $\frac{3}{4}$ inch	- - - - -	0 1 0 0 3 0	
1116	— set of 8, without handles	- - - - -	The set	0 8 6 0 9 6
1117	— set of 8, handled in beech-wood	- - - - -		0 12 6
1118	Long bent chisels, for letting in mortise locks	- - - - -	Each	0 2 0 0 2 6
1119	Short bent chisels, or bolt chisels, for small locks	- - - - -	0 0 6 0 0 9	
1120	Turners' chisels for wood, $\frac{1}{8}$ to $2\frac{1}{2}$ inch	- - - - -	0 0 5 0 3 0	
1121	Smiths' chipping and cross-cutting chisels for metal, 2 to 8 inches long	- - - - -	Each	0 0 6 0 3 0
1122	CHUCKS FOR LATHEES.—(See Chucks for Fixing Works, and Chucks for Ornamenting Works, pages 36 to 40.)			
1123	CLAMPS FOR VICES.—(See Vice Clamps, Nos. 2051 to 2054.)			

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No.			From £ s. d.	To £ s. d.
1124	CLEMENT'S Double self-acting driver chuck.—(See No. 1546.)			
1125	— Clement's Instrument for describing ellipses.—(See Drawing Instruments, No. 1280.)			
1126	COACH WRENCHES.—(See Screw Wrenches, Nos. 1860 to 1862.)	Each	0 3 6	1 12 0
1127	COLLARS AND MANDRELS, to be mounted in wooden headstocks.—(See No. 1519.)	Each	1 7 0	4 8 0
1128	COMPASSES. Iron-joint compasses, 5 to 12 inch	The pair	0 0 6	0 1 0
1129	— Plain compasses	black	0 1 6	0 2 6
1130	—	bright	0 1 9	0 3 0
1131	— Wing compasses	black	0 2 0	0 3 9
1132	—	bright	0 2 3	0 5 0
1133	— Rack compasses	black	0 2 6	0 6 0
1134	—	bright	0 3 6	0 7 0
1135	Bullet, club, cone, or millwrights' compasses ; the one leg with a large cone center, for making circles around central holes	The pair	0 3 6	0 6 6
1136	— Bullet or cone compasses, as above, with shifting cutters, for cutting out plates of metal, &c.	Each	0 7 0	0 12 0
1137	Cutting compasses, of brass and steel, for pasteboard, with a joint to place the knife perpendicularly	The pair	0 15 0	1 5 0
1138	Cutting compasses, for cutting out the leather washers for axletrees, and other purposes	The pair	0 18 0	1 10 0
1139	Beam compasses, of steel, with one shifting slider ; the end of the beam made into an adjusting point, as in spring dividers	Each	0 15 0	1 0 0
1140	Drawing compasses of numerous kinds.—(See Drawing Instruments, Nos. 1246 to 1276.)			
1141	CORKSCREWS, various—(See Cutlery, Nos. 1208 and 1209.)	0 1 6	1 0 0	
1142	COWPER'S Parlour Printing Press, &c., fully described at the end of this Catalogue.—(See Appendix B, page 69.)			
1143	Cowper's Trammel, for drawing ovals.—(See No. 1278.)			
1144	CRAMPS. Short or bent cramps, of iron, from 4 to 30 inches long, with square thread screws ; used by joiners and various other artizans	Each	0 5 6	1 10 0
1145	Long or straight cramps, of iron, from 3 to 6 feet long, with screws and shifting heads and pins	Each	1 0 0	2 10 0
1146	Nicholls's improved cramps with double bars, for joiners ; rewarded by the Society of Arts, 1844	Each	1 10 0	3 10 0
1147	CRIMPING MACHINES, or gauffering machines	—	1 4 0	2 8 0
1148	CROW IRONS of different qualities, 5 to 15 inches long	—	0 1 0	0 8 6
1149	CRUCIBLES. Blacklead, Hessian, Wedgwood, and other crucibles.—(See also Furnaces, Nos. 1371 to 1375)	Each	0 0 1	0 4 0
1150	CURVOGRAPH.—(See Drawing Instruments, No. 1285.)	Each	2 2 0	4 4 0
1151	CUTLERY of all the usual kinds ; namely :—			
	(A.—Knives of many Kinds and Patterns.)			
1152	Bread Knives, with long and stout blades, in ivory or stag-horn handles, with silver mountings	Each	0 4 0	0 10 0
1153	Budding Knives, in ivory handles, straight or clasped	Each	0 2 0	0 3 6
1154	Carving Knives and Forks, of various sizes and patterns, in stag-horn handles and silver mountings	The pair	0 12 0	1 2 0
1155	Cooks' Knives, 4 to 12 inches long, in ebony handles	Each	0 3 0	0 7 6
1156	Cooks' Root Knives, for garnishing, &c.	—	0 3 0	0 4 6
1157	Desk Knives, in straight handles of wood or ivory	—	0 1 0	0 2 6
1158	Desk Knives, with clasp handles and paper-folders, in ivory, tortoise-shell, or pearl-shell	Each	0 6 0	1 10 0

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No.		From £ s. d.	To £ s. d.
CUTLERY continued—Knives.			
1159	Erasing Knives, in straight handles	0 1 6	0 3 0
1160	Fishermen's Knives. Walton's fishing knife, with various instruments, including scissors and vice, for making flies <i>Each</i>	1 0 0	1 10 0
1161	Fishermen's roll-up leather pouches, containing a Walton's knife, a file and rasp, an ivory one foot rule, one pair of scissors with fine points, a needle, and two pairs of tweezers <i>The set</i>	1 10 0	2 0 0
1162	Foresters' Knives, with timber scribes and tape measures, for taking the girt of trees <i>Each</i>	0 15 0	1 10 0
1163	Hunting Knives, with few or many instruments. Some with eyes and swivels, by which they are suspended from a guard-chain <i>Each</i>	0 10 0	5 0 0
1164	Hunting Knives of the Scottish pattern, known as the "Skean Dhu," used for killing deer; made with and without guards and sheaths <i>Each</i>	0 10 0	0 15 0
1165	Masticating Knives of various descriptions; the blades of some of these are capable of being separated for the convenience of cleaning them <i>Each</i>	0 12 0	1 5 0
1166	Oyster Knives, in stag-horn or ivory handles; some with guards <i>Each</i>	0 1 6	0 4 0
1167	Penknives of every variety, in wood, buffalo-horn, stag-horn, ivory, or pearl-shell handles <i>Each</i>	0 1 0	0 14 0
1168	Penknives, containing a Mordan's ever-pointed pencil, and a paper-folder, in stag-horn, ivory, or pearl handles <i>Each</i>	0 5 0	1 1 0
1169	Pocket Knives of every variety, in stag-horn, wood, ivory, or pearl-shell handles <i>Each</i>	0 1 6	1 0 0
1170	Pruning Knives of all kinds, with handles of buffalo-horn, stag-horn, ivory, &c., either straight or clasped <i>Each</i>	0 2 0	0 10 0
1171	Sportsmen's Knives of all the improved patterns, including the Berkeley-hunt, Norfolk, Richmond, Rutland, Vernon, Wellington, and Warncliffe sporting knives <i>Each</i>	0 10 0	3 0 0
1172	Traveller's knife, fork, spoon, and corkscrew, with clasp handles; either united together by sliding pins, or with separate handles of ivory or pearl-shell, and contained in leather cases for the pocket <i>The set</i>	0 15 0	2 0 0
1173	Table Knives and Forks, with horn and wood handles, of twelve different qualities <i>The dozen pairs</i>	0 5 0	1 6 0
1174	Table Knives and Forks, with plain or balanced ivory handles, and of Sheffield or London make <i>The dozen pairs</i>	1 8 0	2 5 0
1175	Table Knives and Forks, with plain or fluted handles of different patterns, in transparent ivory, with silver ferrules; London make <i>The dozen pairs</i>	3 8 0	4 14 6
<i>The knives alone are two-thirds, the forks one-third the above prices. A very complete list of table knives, dessert knives, carving knives and forks, and of various articles of kitchen and table cutlery, is given at the end of this Catalogue.—(See Appendix A, page 68.)</i>			

(B.—Razors of many Kinds and Patterns.)

1176	Razors with handles of wood, buffalo-horn, tortoiseshell, stag-horn, ivory, pearl-shell, &c. <i>Each</i>	0 1 0	0 10 0
1177	Razors in black horn, or ivory handles, in common and leather cases <i>The pair</i>	0 6 0	0 12 0
1178	Razors in Russia or Morocco leather cases, lined with silk velvet, and containing three or four razors each <i>The set</i>	1 0 0	1 18 0
1179	Razors in sets, consisting of seven blades made to fit one handle, and marked for every day in the week <i>The set</i>	1 0 0	1 16 0
1180	Razors in sets of seven, also marked for every day in the week, and with separate handles of ivory, either plain or fluted, contained in handsome cases of Russia or Morocco leather, or of mahogany with brass mountings <i>The set</i>	2 10 0	3 3 0

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No.	CUTLERY continued—Razors.		From £ s. d.	To £ s. d.
1181	Razors with ivory handles, of such a form, that the blades are closed entirely flush with the handles - - - - <i>The pair</i>	0 12 0	0 15 0	
1182	Razors with very thin blades, riveted into brass backs, and furnished with ivory handles - - - - <i>The pair</i>	0 12 0	0 15 0	
1183	Razor Hones; German and other hones, either with or without mahogany cases - - - - <i>Each</i>	0 3 0	0 10 0	
1184	Razor Strops; namely, Escourt's Criterion Strop, and various others of a less expensive kind - - - - <i>Each</i>	0 2 6	0 15 0	
1185	Razor Strop Paste, to renovate the above strops <i>The box</i>	0 1 0	0 2 6	

(C.—Scissors of many Kinds and Patterns.)

1186	Button-hole scissors - - - - - <i>The pair</i>	0 2 6	0 5 0
1187	Cutting-out scissors - - - - -	0 2 6	0 10 0
1188	Drapers' scissors, short, with round ends - - - - -	0 1 6	0 2 6
1189	Flower scissors, to cut and hold - - - - -	0 2 6	0 7 6
1190	Garden scissors. See Pruning Tools - - - - -		
1191	Gentlemen's scissors for dressing-cases - - - - -	0 2 6	0 6 0
1192	Grape-scissors, to cut and hold - - - - -	0 2 6	0 7 6
1193	Hair scissors - - - - -	0 3 0	0 5 6
1194	Horse-trimming scissors, both straight and curved, some with combs - - - - - <i>The pair</i>	0 3 6	0 7 6
1195	Horse-trimming scissors and combs, in sets arranged in leather pouches - - - - - <i>The set</i>	0 16 0	1 16 0
1196	Lace scissors, either with two fine points, or with one fine and one club point - - - - - <i>The pair</i>	0 2 6	0 5 0
1197	Ladies' scissors, in sets of two, three, four, or six pairs of scissors of different sizes, contained in Russia or Morocco leather-cases - - - - - <i>The case</i>	0 10 0	2 5 0
1198	Ladies' scissors, elaborately finished; some with studs, bows or sheaths, of silver or gold - - - - - <i>The pair</i>	0 6 0	2 2 0
1199	Lamp scissors with or without receptacles, to catch the snuff - - - - - <i>The pair</i>	0 2 0	0 4 6
1200	Nail scissors of different sizes, for ladies or gentlemen, in cases of basil, Russia, or Morocco leather, containing one pair of scissors for the right hand, and one pair for the left hand - - - - - <i>The case</i>	0 10 0	0 16 0
1201	Paper scissors, with very long blades - - - - - <i>The pair</i>	0 4 0	0 10 0
1202	Tailors' scissors - - - - -	0 2 6	0 10 0
1203	Work scissors of good quality - - - - -	0 1 0	0 2 6

(D.—Miscellaneous Articles of Cutlery.)

1204	Boot-hooks, in wood, ivory, or pearl handles - - - - <i>The pair</i>	0 2 0	1 0 0
1205	Button-hooks for the pocket or dressing-case, in wood, ivory, or pearl handles - - - - <i>Each</i>	0 1 6	0 5 0
1206	Champagne nippers, with or without corkscrews - - - -	0 3 6	0 10 6
1207	Cheese Scoops, of plain or improved patterns, in ivory handles - - - - <i>Each</i>	0 3 6	0 7 6
1208	Corkscrews, in cross handles of wood, or in turn-over handles of steel for the pocket - - - - <i>Each</i>	0 1 6	0 14 0
1209	Corkscrews, with elevating screws, or with racks and pinions, called Instrument Corkscrews - - - - <i>Each</i>	0 2 6	1 0 0
1210	Flower Gatherers of various sizes, to cut and hold - - - -	0 3 0	0 7 6
1211	Flower Gatherers mounted on poles from 4 to 6 feet long - - - -	0 10 0	0 15 0
1212	Forks for vegetables, mounted in ivory handles - - - -	0 5 0	0 7 6
1213	Key Rings of all sizes, and with names and addresses embossed to order - - - - <i>Each</i>	0 0 4	0 3 0
1214	Knife Sharpeners, with hardened steel rollers, and of other constructions; in handles, or on pedestals - <i>Each</i>	0 7 0	1 1 0
1215	Lancets, in tortoise-shell handles, various - - - -	0 2 0	0 3 6

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No.	CUTLERY continued—Miscellaneous articles.	From £ s. d.	To £ s. d.
1216	Lancets, in sets of 2 to 6, in cases - - - - -	The set 0 6 0	0 18 0
1217	Lobster-crackers, similar to nut-crackers, but larger and stronger - - - - -	The pair 0 5 0	0 7 6
1218	Nail Files and Nail Knives of various patterns, entirely of steel, or with ivory or pearl-shell handles - - - - -	Each 0 1 6 0	0 6 0
1219	Nail Nippers, with curvilinear blades; of small size for ladies, and larger for gentlemen - - - - -	The pair 0 4 6 0	0 8 0
1220	Nut-crackers of steel, or plated - - - - -	0 2 0 0	0 9 0
1221	Pen-making Instruments, with or without nibbers and pen-blades, and in ivory or pearl handles - - - - -	Each 1 0 0 1	16 0
1222	Phlemes for bleeding horses, oxen, &c.; made with sets of 2, 3, or 4 blades, in stag-horn and other handles The set 0 4 6 0	0 7 6 0	1 16 0
1223	Skates of various improved kinds, including the Oxford, Cambridge, and Skating Club patterns, Rodgers's spring skates, and others - - - - -	The pair 0 7 0 1	16 0
1224	Snuffers, plain and patent, of many patterns - - - - -	The pair 0 1 6 0	0 14 0
1225	Steels for sharpening dinner-knives; plain and fluted, in handles of horn, stag-horn, ivory, &c. - - - - -	Each 0 2 6 0	0 6 0
1226	Stilettoes for work-boxes, with ivory or pearl handles - - - - -	0 1 0 0	0 3 6
1227	Teeth Instruments, in ivory handles, and in cases, containing two, three, four, or six instruments - - - - -	Each 0 2 6 1	10 0
1228	Tongue-scarpers of horn, tortoiseshell, and silver - - - - -	0 3 0 0	0 6 0
1229	Tweezers of different patterns - - - - -	0 1 0 0	0 3 6
1230	CYMAGRAPHS, invented by the Rev. Prof. Willis.—(See Drawing Instruments, Nos. 1286 and 1287.) - - - - -	Each 0 7 0 6 6	0
1231	DENTISTS' TOOLS in great variety; and also scaling instruments for the teeth	0 7 0 6 6	0
1232	DIAMONDS. Etching, writing, and glaziers' common diamonds	0 9 0 0	0 15 0
1233	Diamonds with swivel movement, for crown and plate-glass, mounted in brass, electrum, or silver, with wood or ivory handles - - - - -	Each 0 18 0 2 10 0	
1234	Diamond mortars for lapidaries and seal-engravers	Each 1 1 0 1 18 0	
1235	Diamond powder, prepared for use - - - - -	The carat	
1236	DIVIDERS, or spring compasses, with adjusting screws.		
1237	Spring dividers, from 3 to 9-inch black - - - - -	Each 0 2 0 0 3 0	
1238	— 3 to 9-inch bright - - - - -	0 2 6 0 5 6	
1239	—, with cone or bullet-points - - - - -	0 3 6 0 6 6	
1240	DRAW BOLTS used by shipwrights and others - - - - -	0 2 0 0 3 0	
1241	DRAW PLATES for drawing round, oval, square, and triangular wires - - - - -	Each 0 3 0 2 2 0	
1242	DRAWING INSTRUMENTS in great variety, many of which are made both in brass and electrum.		
	(A.—Drawing Instruments in complete Sets, with Scales, &c.)		
1243	Sets of common drawing instruments for the pocket, in fish-skin cases - - - - -	The set 0 10 0 1 10 0	
1244	Sets of drawing instruments of good quality, fitted in leather cases, lined with silk or velvet, the instruments of brass or electrum - - - - -	The set 1 10 0 4 10 0	
1245	Sets of drawing instruments of the best quality, in mahogany or rose-wood cases, the instruments of brass, electrum, or silver, with ivory scales. These are sometimes called magazine cases - - - - -	The set 4 0 0 25 0 0	
	(B.—Dividers and Pens for Drawing.)		
1246	Dividers, common, 3 to 9-inch - - - - -	The pair 0 2 0 0 7 6	
1247	Dividers, best, with sector joints - - - - -	0 3 6 0 10 6	
1248	Dividers, with graduated wings and set screws - - - - -	0 7 0 0 10 6	

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No.	DRAWING INSTRUMENTS <i>continued.</i>	From £ s. d.	To £ s. d.
1249	Hair dividers, for accurate purposes, with a screw adjustment to the one leg - - - - - <i>The pair</i>	0 5 6	0 10 6
1250	Screw dividers, with screw micrometer adjustment connecting the two legs - - - - - <i>The pair</i>	0 12 0	1 0 0
1251	Drawing pens of brass and steel - - - - - <i>Each</i>	0 3 0	0 4 0
1252	— with ivory handles - - - - - <i>Each</i>	0 4 6	0 6 0
1253	Road pens, or those for double lines - - - - - <i>Each</i>	0 6 0	0 12 6
1254	Dotting pens, with various wheels - - - - - <i>Each</i>	0 10 0	0 15 0
1255	Drawing pins of brass, electrum, and steel - - - - - <i>The dozen</i>	0 2 0	0 6 0

(C.—*Compasses with Pen, Pencil, and Divider Points.*)

1256	Compasses, single jointed, with pen, pencil, and divider points, and lengthening bars - - - - - <i>The set</i>	0 10 0	0 18 0
1257	Compasses as above, but double jointed, and of the best quality - - - - - <i>The set</i>	0 18 0	1 10 0
1258	Brunel's compasses, or tube compasses, fulfilling the purposes of the last ; of light and convenient construction <i>The set</i>	1 5 0	1 15 0
1259	Bow pens, bow pencils, and bow dividers, with sector joints, and of ordinary sizes - - - - - <i>Each</i>	0 4 0	0 7 6
1260	Bow pens, pencils, and dividers larger than usual, single and double jointed, and with or without needle points <i>Each</i>	0 10 0	1 0 0
1261	Spring bow pens, pencils, and dividers, with screw adjustments ; for small and delicate purposes - - - - - <i>Each</i>	0 6 6	0 8 6
1262	Finishing bow pens, which may be closed or opened, without changing the position of the band, or that may be straightened, so as to form a ruling pen ; useful in finishing drawings - - - - - <i>Each</i>	0 6 0	0 10 0
1263	Turn-over bow pens, in which the pen, pencil, and divider points are attached by pivots, and never removed <i>Each</i>	0 18 0	1 10 0
1264	Bow compasses, double jointed, with needle point, pen, and pencil points, and lengthening bar, dividers and scale ; making altogether a complete set of instruments, sufficient for most purposes, as they apply to circles from 18 inches diameter downwards ; they are either fitted in cases or pocket books. H. & Co.'s pattern - - - - - <i>The set</i>	2 2 0	2 12 6
1265	Bow compasses, with pen and pencil points, having a central axis, spring socket and screw adjustment. French pattern - - - - - <i>Each</i>	2 0 0	2 10 0
1266	Pocket, or turn in compasses, with pen and pencil points, in brass and electrum ; of various constructions and sizes, some with lengthening bars and bow tops - - - - - <i>The set</i>	0 15 0	2 12 6
1267	Pocket, or turn in compasses, fitted in cases with ivory scales, &c. - - - - - <i>The set</i>	1 0 0	3 3 0

(D.—*Proportional Compasses, Beam, and Triangular Compasses.*)

1268	Proportional compasses with fixed centers ; namely, in the proportion of one to two, (or wholes and halves), one to three, two to three, and other proportions - - - - - <i>Each</i>	0 10 0	1 10 0
1269	Proportional compasses 6 inches long, with shifting centers, graduated for the relations of lines, superficies, cubes, or circles ; cases extra - - - - - <i>Each</i>	1 6 0	1 10 0
1270	Proportional compasses as above, with adjusting bars and screws - - - - - <i>Each</i>	2 2 0	3 3 0
1271	Proportional compasses of metal, 9 to 12 inches long, as above, with or without adjusting bars and screws - <i>Each</i>	1 15 0	4 14 6
1272	Proportional compasses of wood, 2 to 5 feet long, with metal joints ; for making large diagrams, and for other purposes. - - - - - <i>Each</i>		

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No.		From £ s. d.	To £ s. d.
	DRAWING INSTRUMENTS <i>continued.</i>		
1273	Proportional callipers of H. & Co.'s patterns, having calliper bows at the one end, and divider points at the other, for making accurate drawings of machinery and solid objects with great expedition ; and also to assist in making, with the lathe or otherwise, objects of scales differing from those of the drawings from which they are copied. Some of the proportional callipers are made with fixed centers, for definite proportions ; others have shifting centers, are fully graduated for many proportions, and are made with a contrivance to prevent the possibility of the shifting centers becoming altered, whilst the instrument is in use. This mode is equally suited to all such instruments	0 10 0	4 4 0
1274	Triangular compasses, with or without lengthening bars, for transferring triangles	0 16 0	1 10 0
1275	Beam compasses, with wooden or metal beams, two shifting heads or sliders, and various points for drawing, &c. <i>Each</i>	1 10 0	4 0 0
1276	Beam compasses as above, but with graduated beams and micrometer adjustments	2 2 0	6 6 0

(E.—*Instruments for Drawing Ellipses.*)

1277	ELLiptical COMPASSES in brass or electrum ; the ordinary trammel with a cross and beam used for striking ovals. This instrument (which resembles 1275, with the addition of the cross,) only serves for ovals that are <i>larger</i> than the cross, and those in which the <i>difference</i> of diameter does not exceed the length of the arms of the cross <i>Each</i>	3 3 0	6 6 0
1278	COWPER's TRAMMEL. The guide has a fiducial edge, to be placed on the diameter of the intended ellipse. This instrument only strikes the half of the ellipsis at once, but is very easily placed in position, and is universal, or applicable to all ovals intermediate between the right line and semicircle, when they do not exceed in diameter the length of the guide or fiducial edge	2 2 0	4 4 0
1279	HICK's ELLIPSOGRAPH. A modification of the pentagraph, in which templets or gage ovals are used, and other curves may be employed. This instrument offers great facility in placing it exactly on the diameters, and serves for the smallest ellipses, especially those required in isometrical perspective, which have nearly the relative diameters of 7 to 12. This instrument is described in the Trans. Soc. of Arts for 1842, Vol. 54, p. 8.		
1280	CLEMENT's instrument for drawing ellipses. A most elaborate instrument, and probably the most perfect of its class : as, in addition to its being adapted to ellipses of all proportions, and of every size below the maximum ; the instrument has adjustments for arranging ovals, or parts of ovals, in a variety of ways, as in describing the orthographic projections of the sphere, the teeth of wheels, threads of screws, volutes, and other figures. Described in the Trans. of the Soc. of Arts for 1818, Vol. 36, p. 133.		

(F.—*Instruments for drawing Curved Lines, &c.*)

1281	Templets, or curved patterns made in wood, for mechanical drawing ; of French manufacture, and called <i>Pistolets</i> .	0 1 0	0 3 0
1282	Templets in wood or brass, formed as true spirals		
1283	formed as circular arcs of from 1 to 500 feet radius, for laying down railway curves ; made to order.		

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No.	DRAWING INSTRUMENTS <i>continued.</i>	From £ s. d.	To £ s. d.
1284	ARCOGRAPH for drawing arcs of large circles, the centers of which are beyond the limits of the drawing-board. Invented by B. Rotch, Esq.; described in the Trans. of the Soc. of Arts for 1821, Vol. 39, p. 49 - - - - <i>Each</i>	2 12 6	3 13 6
1285	CURVOGRAPH for drawing lines of easy curvature. The instrument has a strong bar, perforated for several perpendicular wires, to the ends of which a flexible rod is united by pins; to this rod any easy curve may be given, such as those occurring in naval architecture, &c.	2 2 0	4 4 0
1286	CYMAPHRAPH, invented by the Rev. Professor Willis, for transferring to paper the sections of architectural mouldings. The most simple cymagraph is made as a wire with a carriage for the pencil, and a cranked style for traversing the mouldings of architectural structures - - <i>Each</i>		0 7 0
1287	CYMAPHRAPH of the best kind, made as a double parallel rule, to keep the style always parallel with itself; the mechanism is attached to a folding drawing-board for the pocket, having stays to retain it securely against the moulding, whether used for copying the horizontal or vertical section. The instrument itself is contained in a leather case also intended for the pocket - - - - - <i>Complete</i>	5 5 0	6 6 0
1288	ODONTAGRAPH, invented by the Rev. Professor Willis, for describing the curves proper for the teeth of wheels for machinery. Made on card board, with tables and varnished.-(See Appendix C., page 70) - - - - - <i>Each</i>		0 5 0
1289	PENTAGRAPHS, or Pantographs, for reducing or enlarging drawings; made of the usual construction, and from 2 to 4 feet long - - - - - <i>Each</i>	6 6 0	10 10 0
1290	PENTAGRAPHS made to order, on the constructions invented by Macfarlane, Napier, Oldham, Professor Wallace, and Professor Willis, and which are severally adapted to different purposes in the graphic and useful arts.		

(G.—*Scales, Parallel Rules, Sectors, and Protractors.*)

1291	Scales of equal parts, 18 inches long, ruled on card in Holtzapffel & Co.'s dividing engine. <i>The dozen, 9s. Singly, 1s. each.</i> —(See the List at the end of this Catalogue, Appendix C, page 70.)			
1292	Plane and plotting scales, in box-wood, brass, card, electrum, horn, and ivory, of various sizes and qualities <i>Each</i>	0 1 0	1 0 0	
1293	Chain scales, of box-wood, brass, and ivory, 12 to 18 in. <i>Each</i>	0 3 6	1 0 0	
1294	Off-set chain scales, to match the above - - - - - <i>Each</i>	0 1 0	0 5 0	
1295	Donn's, Gunter's, Marquis's, navigation, logarithmic, and various other scales, to order - - - - - <i>Each</i>	0 5 0	1 0 0	
1296	Parallel rules, various, in box-wood, brass, ebony, and ivory, with plain or graduated edges; constructed either with rollers, or with double or triple bars - - - - - <i>Each</i>	0 2 0	1 10 0	
1297	Sectors, with common and best joints, in box-wood, brass, and ivory, 4½ to 6 inch - - - - - <i>Each</i>	0 4 0	0 15 0	
1298	Protractors for laying down angles, made in box-wood, brass, card, electrum, horn, and ivory, and of semicircular, rectangular, and various other forms - - - - - <i>Each</i>	0 3 0	1 0 0	
1299	Chaplin's protractor, consisting of an ivory scale, having a semicircular opening, within which moves a rectangular sector of brass, electrum, or silver; all the edges of the instrument are graduated - - - - - <i>Each</i>	1 18 0	2 10 0	
1300	Rolling protractor in brass, with center point, and graduated roller, for laying down or reading off degrees - - - - - <i>Each</i>	2 10 0	3 10 0	
1301	Protractors or angular instruments of more accurate kinds <i>5 5 0</i>	8 8 0		

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No.	DRAWING INSTRUMENTS continued.		From £ s. d.	To £ s. d.
(H.— <i>Drawing Squares and Drawing Boards, &c.</i>)				
1302	T Squares of ebony and mahogany, 12 to 36 inches long, with fixed or shifting stocks, and of various qualities <i>Each</i>	0 5 6	1 10 0	
1303	T Squares with steel blades, 18 to 36 inches long, and with fixed or shifting stocks, of wood or metal, with or without graduations, and of various qualities - - - <i>Each</i>	0 7 6	2 10 0	
1304	Set Squares, or Triangular Squares, of mahogany, from 2 to 12 inches long, with angles of 30, 45, and 60 degrees - - - - - <i>Each</i>	0 1 0	0 5 0	
1305	Set Squares of box-wood and ivory with graduations, to order	0 1 6	0 12 0	
1306	Nicholson's Centro-linead, for drawing lines to a distant center ; used for perspective drawings - - - - - <i>Each</i>	1 8 0	1 12 0	
1307	O'Brien's substitute for the Centro-linead, rewarded by the Society of Arts, 1844 ; consisting of a T square, with central blade, a two-foot rule without graduations, and two points or brad-awls - - - - - <i>Complete</i>	0 12 0	1 0 0	
1308	Drawing Boards in deal or mahogany, of various sizes, and constructed in different ways, to lessen their disposition to become warped ; made to order - - - - - <i>Each</i>	0 10 0	2 10 0	
1309	Drawing Boards intended for the carpet-bag, &c. ; glued up in three thicknesses of mahogany, both to avoid warping, and to enable the board to serve as a sheath for the drawing square accompanying the board ; sizes from 10 by 15 inches, to 16 by 24 inches. H. & Co.'s pattern <i>Each</i>	0 18 0	1 5 0	
1310	Drawing Pins, of brass, electrum, and steel - <i>The dozen</i>	0 2 0	0 6 0	
(N.B.— <i>All descriptions of Instruments, Scales, Rules, &c., for Drawing, made to order.</i>)				
1311	DRESSING CASES in great variety, and made to order.			
1312	Leather roll-up Dressing Pouches, in basil, Morocco, or Russia leather - - - - - <i>Each</i>	1 0 0	5 0 0	
1313	Leather Dressing Cases, variously arranged - - - - - <i>Each</i>	2 0 0	6 0 0	
1314	Mahogany and Rosewood Dressing Cases for ladies or gentlemen, with trays lined with velvet, or with instruments inlaid in the solid wood - - - - - <i>Each</i>	2 10 0	20 0 0	
	Any of the contents may be had separately.			
1315	DRILLING TOOLS of various kinds.—(See also Boring Tools, Braces, Brace-bits, and Breastplates.)			
(A.— <i>Small Reciprocating Drilling Tools.</i>)				
1316	Drills or Breast Drills, with brass or wood ferrules <i>Each</i>	0 0 6	0 2 6	
1317	Drill Stocks with centers, brass ferrules, and sets of 6 to 12 drills - - - - - <i>Each</i>	0 4 6	0 8 6	
1318	Drill Stocks with handles of various patterns, and 6 to 12 drills ; country made - - - - - <i>Each</i>	0 7 6	0 10 6	
1319	Drill Stocks, with fluted cocoa-wood handles that contain 12 drills. H. and Co.'s pattern, made of three sizes <i>Each</i>	0 15 0	0 18 6	
1320	Drilling Lathes and 12 drills, suitable for handles, or to be held in the vice - - - - - <i>Each</i>	0 9 0	1 0 0	
1321	Drill Bows for the above, of cane or whalebone - - - - - <i>Each</i>	0 1 0	0 2 0	
1322	Drill Bows of steel ; of various kinds - - - - - <i>Each</i>	0 3 6	0 10 6	
1323	Freeman's Drill Tool, a substitute for the Drill Bow. Registered, Jan. 1844. Manufactured by H. & Co. <i>Each</i>	0 1 6	0 2 6	
1324	Upright Drill Stock, with cross staff - - - - - <i>Each</i>	0 5 0	1 1 0	

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No.	DRILLING TOOLS <i>continued.</i>		From £ s. d.	To £ s. d.
(B.— <i>Smith's Manual Braces and Press Drill Frames.</i>)				
1325	Crank-form Brace, or common Hand Brace, with or without screw for supplying pressure	Each	0 15 0	2 5 0
1326	Corner Drill, with pair of mitre wheels, and pressure screw	3 15 0	4 10 0	
1327	Lever Drill, with pressure screw	Each	1 10 0	2 5 0
1328	Ratchet Drill		2 10 0	4 10 0
1329	Shank's substitute for the last, with spring clutch, &c.	2 10 0	4 10 0	
1330	Shank's Differential Screw Drill, for very large holes, moved by a winch handle, and with self-acting motion to the pressure screw	Each	6 10 0	8 10 0
1331	Smith's Press Drill, Vice Stand, and Clamp. This consists of a heavy tripod stand, with a large vice and a clamp, for holding pieces not exceeding 18 inches square; it has a press-drill frame, consisting of an upright beam with sliding-cross head, and an extending arm, with a screw at the end for forcing in the cut. The press drill is adaptable to all positions; the work may therefore be drilled, either in the vice or the clamp, on trestles, or on the ground, according to its size and form. A double and a single-handed brace, with 12 cast-steel drills to each.			
	The Smith's press drill, when large and strong, is well adapted to manufactures and public works; when smaller, it is found convenient for amateurs	Complete	22 0 0	28 0 0
1332	The Press Drill Frame belonging to either of the above, mounted on wooden benches, with or without the vice or clamp.			
1333	Press Drill Frames, of smaller and more portable kinds, to be attached to the bench, the vice, or to the work that is being drilled		3 0 0	5 0 0
(C.— <i>Boring and Drilling Machines.</i>)				
1334	Apparatus for Drilling and Wheel-cutting, &c., applicable to metal turning sliding rests. Designed by the Rev. Prof. WILLIS, re-constructed by H. & Co. (For the description, see Lathe Apparatus, No. 1627.)			
1335	Lever Drilling Machine, with cylinder and weight; an appendage to the lathe for rapid drilling, in which any required degree of pressure may be employed against the drill or cutter with perfect uniformity, thus removing the risk of accident. It is likewise adapted to the exact repetition of any hole or cut, in a number of successive pieces; both hands are at liberty for the management of the work.			
1336	Upright Boring Machine, in which the cut is forced in with a lever, either by the hand, a weight, or by a screw and ratchet. The machine may be furnished with a shifting table, having clamps, bolts, &c., for very readily fixing any desired part of the work, immediately under the drill. It may be likewise adapted to drilling series of holes in right lines, circles, &c., and to the employment of cutters in various ways; it is worked either by a treadle, winch-handle, or power. H. & Co.'s pattern			
1337	ENGINES, MACHINES, AND TOOLS, for Boring, Drilling, Grinding, Sawing, Screw-cutting, Shaping, Planing, Turning, Wheel-cutting, &c.—(See Boring, Drilling, &c.)			
1338	ELLIPTICAL INSTRUMENTS, or Trammels for Drawing. (See Nos. 1277 to 1280.)			

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No.			From £ s. d.	To £ s. d.
1339	EMERY, in powder of various degrees of fineness	<i>The lb.</i>	0 0 6	
1340	Emery paper	<i>The quire</i>	0 2 0	
1341	Emery sticks, for polishing iron and steel	<i>Each</i>	0 0 6	
1342	ENGRAVERS' Tools of all descriptions, for copper, steel, wood, &c.			
1343	Burnishers ; oval, round, and square	<i>Each</i>	0 1 0	0 3 6
1344	Cushions, of various sizes		0 1 0	0 5 6
1345	Diamond points for etching		0 9 6	0 12 6
1346	Etching points and needles of steel, or dry points		0 1 0	0 2 6
1347	Gravers ; square, lozenge, chalk, and knife gravers		0 0 3	0 0 6
1348	Magnifiers		0 1 6	0 2 0
1349	Magnifier stands of different qualities		0 4 0	0 10 0
1350	Mezzotinto grounding tools		0 5 0	1 0 0
1351	Scrapers, fluted and plain		0 2 0	0 3 0
1352	Scorbers ; flat, round, half-round, feather-edged, &c.		0 0 2	0 0 4
1353	Roulettes, to be used by hand		0 2 0	0 3 6
1354	FARRIERS' TOOLS in sets, fitted to anvils	<i>The set</i>	6 0 0	8 0 0
1355	FERULES of brass for tool handles	<i>The lb.</i>	0 4	6

1356 FILES, SHEFFIELD AND LANCASHIRE.

1357 — Files of the usual kinds. Of the numerous varieties of files that are ordinarily manufactured, those enumerated in the following list may be considered to be most in use amongst artizans in general; they are arranged in the supposed order of their usefulness, the first being the most in requisition; namely,

Parallel hand-files, half-round, pillar, taper, cross, round, triangular, square, slitting, and knife-edge files. Of the numerous other files, many are nearly restricted to particular purposes, especially to clock and watch-work.

The annexed scales of prices of Sheffield and Lancashire files, denote the average prices of all kinds, the smoothest being the most expensive.

No.	Description	Sheffield.		Lancashire.	
		From £ s. d.	To £ s. d.	From £ s. d.	To £ s. d.
1358	Files for sharpening saws ; namely, triangular, half-round or gulletting files, and mill-saw files, 2½ to 8 inches	0 30	40	30	5
		<i>Each</i>			
1359	Files and rasps for joiners and cabinet-makers, 5 to 16 inches	0 54	0		
1360	Files and rasps for farriers and shoemakers, 5 to 16 inches	0 54	0		
1361	Files and rasps, with tangs of uniform size, for the socket handles, No. 1445	1 01	6		
1362	Rifflers, or files and rasps bent to a variety of curves and patterns, for cabinet-makers, carvers, dentists, hand-rail makers, modellers, sculptors, &c.	0 42	6		
1363	Rubbers, or thick heavy files, of square and triangular sections, and from 10 to 16 inches long, rough, second-cut and smooth	0 0 11	0 1 5		
		<i>The lb.</i>			
1364	Raoui's files, which are cut by machinery ; they are principally smooth flat files, 3 to 7 inches in length	0 1 0	0 3 2		
1365	Robison's (Sir John) curvilinear files, from 8 to 12 inches long ; these are cut whilst flat, and are afterwards bent or channelled, so as to present one convex and one concave side. Rewarded by the Society of Arts, 1843	0 1 0	0 3 0		
1366	FLATTING ROLLERS for laminating metal, for the use of jewellers and others, with cast-steel rollers from 2 to 6 inches long.	0 1 0	0 3 0		

No.		From £ s. d.	To £ s. d.
1367	FORGING TOOLS.		
1368	— Forging tools in sets fitted to anvils, adapted either to ordinary smith's work, or to farriery - - - - - <i>The set</i>	6 0 0	14 4 0
1369	— Forces fit for the work of the smith or farrier; in cast-iron, with coal and water troughs, the bellows are in a separate frame, of a very light construction. This forge is particularly useful in those cases where easy removal is wanted; viz., to millwrights, builders, railway contractors, or in gentlemen's stables, and farm-yards, &c. - -		14 0 0
1370	— PORTABLE Forge of cast-iron, for smith's work of small scale, with a pair of bellows, worked by means of an iron treadle; nine fire-irons, or pairs of tongs, &c. <i>Complete</i>		8 0 0
1371	— PORTABLE FORGE as above, but with twelve fire-irons. A small furnace, capable of melting about eight pounds of brass, and six crucibles. An additional small grate for charcoal, and an oil-lamp, to be used with a blow-pipe adapted to the bellows, having three jets for blasts of different degrees of intensity. This apparatus serves also as a table blow-pipe, and for numerous larger applications of heat, not exceeding that required to weld a bar of iron one inch square - - - - - <i>Complete</i>		12 10 0
1372	— A chimney and pipe for either of the above forges, to conduct the smoke when the forge is not placed under a flue	2 10 0	3 10 0
1373	— A pedestal of cast-iron, and sheet-iron flue, to enable the furnace of the forge, No. 1371, to be more conveniently used, as an air-furnace; it is then simply erected on the ground, quite independently of the forge, and without brick-work, being complete in itself - - <i>Complete</i>		1 10 0
1374	— Air-furnace, for melting about fifteen to twenty pounds of brass, with pedestal, tile, chimney, &c., complete. This, as in the last arrangement, simply requires to be placed on the ground, as in the middle of a yard; or if used in a room, that the pipe should be led into a chimney, as with a German stove - - - - - <i>Complete</i>	4 10 0	6 10 0
1375	— Flasks, or casting-boxes, for moulding small works, together with core-boxes, and the few simple tools used in moulding objects in sand.		
1376	— Soldering apparatus; namely, a birch-wood or mahogany case, containing four boxes, with resin, borax, coarse and fine spelter, two cups for mixing solder, one cup for sal-ammoniac water, one glass bottle for ditto, two copper soldering bolts, soft solder, and a box with silver solder -	2 10 0	2 15 0
1377	FRANKLIN'S Expanding Center Bits. (See No. 1059.) <i>The set</i>	0 4 6	0 7 6
1378	FREEMAN'S Drill Tool. (See No. 1323.) - - - <i>Each</i>	0 1 6	0 2 6
1379	FURNACES for melting brass. (See Nos. 1371, 1373, and 1374.)		
1380	GAGES for various purposes, in the mechanical arts. (A.— <i>Gages for Joiners.</i>)		
1381	— Marking gages of beech-wood, or hardwood, the heads fastened either with screws or wedges - - - - <i>Each</i>	0 1 0	0 1 6
1382	— Cutting and routing gages as above, various - - - -	0 1 0	0 5 6
1383	— Mortise gages with two points, one of them capable of adjustment either by hand or by an end screw - - <i>Each</i>	0 2 6	0 7 6
	(B.— <i>Gages for Sheet-metal, Wire, &c.; all but the first three made by H. and Co.</i>)		
1384	— Birmingham, iron-wire and sheet-iron gage - - - <i>Each</i>	0 3 0	0 10 0
1385	— Birmingham, brass-wire, sheet-brass and metal gage <i>Each</i>	0 5 0	0 10 0

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No.		From £ s. d.	To £ s. d.
	GAGES <i>continued.</i>		
1386	Lancashire steel-wire gage ; the smaller sizes distinguished by figures, the larger by letters, without reference to Standard Measure, or the divisions of the inch - - -	0 7 6	0 10 0
1387	Standard sector gages, recommended by the Scottish Society of Arts, to be used for wires, sheet-metal, &c. The sector gage is usually made of two straight steel bars, placed obliquely so as to meet at the point marked 0, and to be half an inch asunder at the point 50 ; the intermediate distances are graduated into 50 divisions on each bar. Consequently, the wire is arrested in the angular groove, at that figure which denotes its diameter, in hundredths of an inch. Other proportions and sizes to order - <i>Each</i>	2 0 0	2 10 0
1388	Sector gages for tubes and apertures, made on the above method ; the smallest serves from 0 to $\frac{1}{2}$ inch, the second from $\frac{1}{2}$ to 1 inch, and so on. These also serve for setting callipers and other instruments, either to decimal measures, or to the subdivisions of the inch into 8, 16, 32 parts, if the sector gages are so graduated - - - <i>Each</i>	0 8 0	0 14 0
1389	Sliding gage of brass, having both narrow parallel jaws, and large calliper bows ; adapted, amongst other uses, to measure the central part or rib, between the flanges of railway bars. The stem is graduated into inches, and thirty seconds, and also into tenths, with a vernier to read off in hundredths of an inch - - - - - <i>Each</i>		2 10 0
1390	Sliding gages of steel, about 6 inches long, and very light, with gun-metal sliders, graduated into tenths of an inch, with a vernier to read off in hundredths - - - <i>Each</i>		0 18 0
1391	Sliding gages similar to the above, but in brass, and more delicately made, with a chamfer slide and bearing spring, and with a vernier to read off in thousandths of an inch - - - - - <i>Each</i>		2 2 0
1392	Chater and Hayward's micrometer gage, for sheet glass, sheet-metal, &c. ; it has a screw with a large graduated disk, by which the thicknesses may be accurately read in thousandths of an inch, or in fractional parts as the 8th, 9th, 10th, to the 40th, of an inch. Chater and Hayward's gage is used by the Excise for glass, and well deserves to be generally adopted as a sheet-metal gage - - <i>Each</i>		2 5 0
1393	Parallel gage, with long jaws, for trying the parallelism of works that are under formation. This has no graduations		1 16 0
1394	Marking gage for accurate works in metal ; made in brass, somewhat after the manner of the carpenter's gages, but graduated like No. 1389 - - - - - <i>Each</i>		1 5 0
1395	GARDENING AND PRUNING TOOLS, various, and in sets. (See Pruning Tools, Nos. 1730 to 1750.)		
1396	GEOLOGICAL TOOLS AND INSTRUMENTS.		
1397	Geological and mineralogical hammers, with square, round, and globular faces and chisel edges, &c. ; including Bakewell's, Roberts', Robison's, the Ordnance Survey, and other geological hammers ; variously handled <i>Each</i>	0 4 6	0 10 0
1398	Geological chisels, and also the picks or Cornish gads used in mining - - - - - <i>Each</i>	0 1 6	0 3 0
1399	Bakewell's angle meter, for ascertaining the vertical and horizontal inclinations of geological strata. The angle meter somewhat resembles a sector, and the more complete have a moveable spirit level and a mariners' compass attached, the whole being contained in a leather case for the pocket - - - - - <i>Each</i>	2 2 0	2 12 6
1400	Inclinometer ; an instrument for the same purposes as the last. It consists of a mariner's compass, the case of which is square, for directing the position of the instru-		

No.	GEOLOGICAL TOOLS AND INSTRUMENTS <i>continued.</i>	From £ s. d.	To £ s. d.
1400	ment, and which contains a metal plumb-bob, to denote vertical angles - - - - - <i>Each</i>	1 0 0	1 4 0
1401	Geological tools and instruments ; namely — hammers, chisels, measuring tape or chain, plumb-bob, boxed compass, &c., variously assorted, and fitted in belts, pouches, or cases, to order.		
1402	GIMLETS, common and twisted, with ordinary handles <i>Each</i>	0 0 4	0 0 6
1403	— with hard wood handles —	0 0 6	0 1 0
1404	Spike gimlets, from $\frac{1}{4}$ to $\frac{3}{4}$ inch - - - - -	0 0 6	0 1 6
1405	GLASS PAPER of various degrees of fineness - - <i>The quire</i>		0 2 0
1406	GLAZIERS' TOOLS.		
1407	Diamonds, common glaziers' diamonds - - - - - <i>Each</i>	0 9 0	0 15 0
1408	— swivel or patent diamonds, with hard-wood or ivory handles, mounted in brass or silver - - - - - <i>Each</i>	0 18 0	1 16 0
1409	Diamonds for plate-glass, like the last, but larger - - - - -	1 16 0	2 10 0
1410	Hammers for chipping - - - - - <i>Each</i>	0 2 0	0 3 0
1411	Hammers for sprigging - - - - -	0 2 0	0 3 0
1412	Knives ; chipping, hacking, pallet, putty, and stopping knives 0 1 0	0 1 0	0 1 9
1413	Rule, with or without slides - - - - - <i>Each</i>	0 2 6	0 5 6
1414	Squares, or wooden T squares - - - - -	0 2 6	0 4 6
1415	Swing tables, for cutting circular glass, to order.		
1416	GLUE, of ordinary, Salisbury and other kinds - - - <i>The pound</i>	0 0 8	0 1 0
1417	Glue-pots of copper, with the inner vessels tinned - <i>Each</i>	0 2 0	0 15 0
1418	GOUGES. Firmer gouges, of cast steel, $\frac{1}{2}$ to 2 inch - - - - -	0 0 4	0 1 8
1419	Firmer Gouges in sets of 12, from $\frac{1}{2}$ to 1 inch - <i>The set</i>		0 5 0
1420	The above set handled in beech-wood - - - - -		0 8 0
1421	The above set handled in hard-wood - - - - -		0 12 6
1422	Socket gouges, $\frac{1}{2}$ to 2 inch - - - - - <i>Each</i>	0 0 8	0 2 0
1423	Turners' gouges, $\frac{1}{2}$ to 2 inch - - - - -	0 0 6	0 2 9
1424	GRAVERS. Lozenge, square, and chalk gravers, for engraving on copper, steel, and wood - - - - - <i>Each</i>	0 0 3	0 0 6
1425	GRINDING APPARATUS.		
	(A.— <i>Apparatus for Mechanicians, and Amateurs.</i>)		
1426	Grindstones, from 1 inch to 36 inches diameter, not mounted. The smallest of these grindstones are used by dentists.		
1427	Grindstones, from 12 to 18 inches diameter, mounted in cast-iron troughs, intended to be placed on the bench or table. These grindstones are worked by winch-handles, and have rests for the support and guidance of the tools <i>Each</i>	1 10 0	2 15 0
1428	Grindstones, from 20 to 36 inches diameter, mounted on pedestals or frames of wood or iron, with water-troughs. These grindstones are worked either with treadles or winch-handles, and have rests for the tools - - - <i>Each</i>	6 0	0 12 0
	<i>The grindstones, Nos. 1427 and 1428, are mounted on an improved plan, designed by HOLTZAPFFEL and Co. ; they cannot be disturbed from their original setting, by extreme change from wet to dry, by accident, nor by removal from their spindles for packing. New grindstones, ready mounted and turned for work, may be supplied, without requiring access to the particular machine for which they are intended.</i>		
	(B.— <i>Apparatus for Amateur Turners.</i>)		
1429	Grinding and polishing lathe, for the general purposes of the amateur ; with 2 grindstones, 1 metallic wheel, 1 brush, 1 buff wheel ; fitted on separate spindles, after an improved manner, by which the facility of changing them is much increased. Cast-iron water-trough, with drip-can,		

No	GRINDING APPARATUS <i>continued.</i>	From £ s. d.	To £ s. d.
	and two rests for grinding tools upon the metal lap to particular angles.		
	The whole mounted on a frame of beech-wood, with iron foot-wheel and treadle, backboard, and box, containing three tin canisters, with polishing powders, three brushes, and a scraper - - - - -		
1430 ——	Instruments for sharpening and polishing the straight and angular tools employed in eccentric and ornamental turning. The instrument has a horizontal and a vertical adjustment, each graduated; so that when the tool is fixed in the instrument, it may be adjusted to any definite angle required for the point, and also to any bevel or chamfer. When so fixed, the two legs of the instrument and the extremity of the tool together constitute a tripod, and the tool is then sharpened on a piece of oil-stone, smoothed on a slab of brass, and polished on a slab of iron, respectively inlaid in the three drawers of the mahogany case, which contains the instrument, the three canisters of powders, and the oil-can required therewith	8 8 0	
1431 ——	Instruments for grinding and setting bead tools and drills for ornamental turning; consisting of a small gun-metal lathe-head, with 6 brass and 6 iron conical grinders, suited to bead tools and drills of all curvatures below $\frac{1}{8}$ inch diameter. The lathe has also 12 drills, is mounted on a table-tee to fit the lathe rest, and is generally driven by a pulley screwed upon the mandrel of the lathe; the whole contained in a box, with a drawer - -	5 0 0	
1432 ——	HORIZONTAL GRINDING MACHINE, intended for grinding various substances, after the manner of the lapidary, but principally for grinding and setting tools that are required to have accurate, rectilinear and smooth edges, but that are beyond the range of the instrument. No. 1430.	5 0 0	
	The horizontal grinding machine has a cast-iron frame, with a vertical mandrel running within a steel collar, and upon an elevating screw, for adjusting the laps relatively to the iron surface-plate. Three laps of lead, brass, and iron, used respectively with emery, oilstone powder, and crocus.		
	The whole mounted on a frame of beech-wood, with iron foot-wheel, treadle, and a pair of guide pulleys to conduct the line from the foot-wheel to the mandrel - -		
1433 ——	Instrument for grinding and setting ordinary turning tools, to be used with the above. The best kind has a horizontal and a vertical movement, each graduated, nearly as in the instrument described under No. 1430 - - - - -	10 10 0	1 10 0 3 5 0
	(C.— <i>Apparatus for Amateur Lapidaries.</i>)		
1434 ——	LAPIDARY MACHINES, constructed after the manner of the horizontal grinding machine, No. 1432, so as to be worked by the foot, and fitted to order with any selection of the following wheels, namely—slicers or slitting wheels of sheet-iron—laps of lead, pewter, tin, iron, copper, &c.—and wood, cloth, buff leather, or brush wheels—so as to serve for slitting, roughing, smoothing, and polishing pebbles, gems, glass, shells, &c.		
	The grinding and polishing wheels are screwed on the upper extremity of a vertical mandrel, running within a steel collar, and upon a center; and the wheels are surrounded by a large trough to catch the water and polishing materials.		
	The whole mounted on a frame of beech-wood, with		

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No.	GRINDING APPARATUS <i>continued.</i>	From £ s. d.	To £ s. d.
	iron foot-wheel, treadle, and a pair of guide pulleys, to conduct the line from the foot-wheel to the mandrel -	12 0 0	18 0 0
1435 —	Apparatus with swinging arm and various adjustments, for holding the stones whilst they are being slit, so as to enable parallel slices to be cut off - - - - -	3 0 0	4 0 0
1436 —	Instrument for grinding facets on gems, by which each facet of every series may be made equidistant, and at the same angle. This instrument is a modification of that constituting part of No. 1430 - - - - -		4 0 0
1437 GUN TOOLS.	Gun wrenches, solid or plain - - - - - <i>Each</i>	0 10 0	1 0 0
1438 —	Expanding gun breech wrenches, with 4 pairs of jaws - - - - -		1 13 0
1439 —	Gun lock vices - - - - -	0 2 6	0 5 0
1440 —	Gun punches for wadding - - - - -	0 1 6	0 2 6
1441 —	Gun turn-screws, with and without pickers - - - - -	0 1 0	0 2 0
1442 GUNTER'S SCALES.	(See No. 1295.) - - - - -	0 4 0	0 8 0
1443 HAMMERS.	Bricklayers', carpenters', chasers', clock, copper-smiths', garden, glaziers', planishing, plasterers', riveting, saddlers', sledge, tinsmens', upholsterers', veneering, and watch hammers, with or without handles - - - - - <i>Each</i>	0 1 6 0	6 0
	See also Geological Hammers, No. 1397.		
1444 HANDLES	of beech or hard-wood, from 3 to 10 inches long, and with brass ferrules, for files, turning tools, &c. <i>The dozen</i>	0 1 0 0	12 0
1445 —	Handles, with brass sockets, having each a rectangular mortise and side screw, for awls, chisels, files, saws, turning tools, and numerous other instruments, which are made with tangs of corresponding size, for the sake of portability - - - - - <i>Each</i>	0 4 6 0	5 6
1446 —	Handles with spring sockets, clip rings, and side screws, for files with tangs of the customary forms - - - - - <i>Each</i>	0 3 6 0	7 0
1448 —	Handles with spring sockets of brass, with side screws as above, for sliding rest tools and others - - - - - <i>Each</i>	0 7 0 0	8 0
1449 HAND PADS,	or handles, with sockets and side screws for key-hoe saws - - - - - <i>Each</i>	0 2 0 0	3 6
1450 —	Hand Pads hollowed out to receive sets of from 6 to 24 tools for general purposes, to be carried in the pocket - <i>Each</i>	0 5 0 1	0 0
1451 HAND VICES,	with or without handles, and with straight or cross chaps - - - - - <i>The pair</i>	0 2 6 0	9 0
1452 —	Pin vices - - - - -	0 3 0 0	7 6
1453 —	Pin tongs, or sliding tongs - - - - -	0 2 0 0	3 6
1454 HARD WOOD	of numerous sorts, in the log, or prepared for turning.—(See Woods, Nos. 2075 to 2077.)		
1455 HATCHETS	of many kinds, handled in beech or hard-wood; also hatchets to be used in the left hand - - - - - <i>Each</i>	0 3 6 0	7 6
1456 HAWTHORN'S ENGINEERS' RULE.	— (See Slide Rules, No. 1792.) - - - - - <i>Each</i>	0 7 6 0	9 0
1457 HEDGING BILL HOOKS.	(See Pruning Tools, No. 1732.) - 0	5 0 0	12 0
1458 HICK'S ELLIPSOGRAPH.	(See No. 1279.)		
1459 HONES	for knives and razors; German and other hones, with and without cases - - - - - <i>Each</i>	0 3 0 0	10 0
1460 HOOKS AND EYES,	or couplers, to unite the ends of the cat-gut bands of lathes, and other machinery; hooks and eyes below $\frac{1}{4}$ inch - - - - - <i>The pair</i>	0 1 6 0	4 0
1461 —	Hooks and Eyes from $\frac{1}{4}$ to 1 inch, made to order.		
1462 —	Nicholl's improved hooks and eyes. Each set consists of two eyes for the ends of the line, and a double hook. Rewarded by the Society of Arts, 1842 - - - - - <i>The set</i>	0 2 3 0	7 0
1463 IBBETSON'S (J. H., ESQ.)	Geometric chuck. (See No. 1586.)		
1464 —	Brief sketch of the same. (See No. 1589.) - Pamphlet		0 5 0
1465 —	Compensating index for the equal division of the ellipse. (See No. 1640.)		

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No.		£	s.	d.
1466	IBBETSON'S (J. H. ESQ.) Compound eccentric chuck. (See No. 1582.)			
1467	Specimens of eccentric turning. Octavo, in cloth	1	1	0
1468	INSTRUMENT for setting angular slide rest tools. (See No. 1430.) Set	5	0	0
1469	Instruments for setting bead tools and bead drills. (See No. 1431.) Set	5	0	0
1470	Instruments for grinding facets on gems. (See No. 1436.)	4	0	0
1471	Instruments for drawing, measuring, &c. (See Drawing, &c.)			
1472	IRON, cast or forged, to any patterns.			
1473	IVORY, in the task ; also in blocks or prepared pieces.			
1474	JEWELLERS' BENCHES, with complete sets of tools, to order.			
1475	JOINERS' BENCHES.—(See Planing Benches, Nos. 1715 to 1719.)	4	0	52 10 0
1476	KNIVES of numerous kinds. (See Nos. 1152 to 1175, and also the list of table knives and forks, at the end of this Catalogue. Appendix A, page 68.)			
1477	Knives with shifting guards for cutting pasteboard partly through ; used for modelling in card		Each	0 3 6
1478	KNIFE CLEANING MACHINES	4	10	0 5 10 0
1479	LACKERS for brass, hardwood, softwood, &c. The bottle	0	2	6 0 5 0

LATHES, AND APPARATUS FOR THE SAME.

No.		£	s.	d.
1480	LATHES FOR MECHANICIANS, of many different constructions, and with frames of wood or iron ; fitted with the apparatus required by various classes of artizans.			
1481	LATHES specifically adapted to the purposes of Boring, Drilling, Grinding, Polishing, Sawing, Shaping, Screw-cutting, Wheel-cutting, &c. (See Boring, Drilling, &c.)			
1482	LATHES FOR AMATEURS, intended for Turning Plain or Ornamental Works of every description. <i>The Lathes and Apparatus manufactured by Holtzapffel and Co., for Amateurs, are exceedingly various, so as to admit of very great choice ; and to assist the Amateur in the selection. EIGHTEEN COMPLETE LATHES are first described, and subsequently various DETACHED PARTS OF LATHES are described under appropriate heads, namely :—</i>			

(COMPLETE LATHES.)

1. Lathes, Descriptions One to Six, for the general purposes of hand turning ; page 29.
2. Lathes, Descriptions Seven to Twelve, with traversing mandrels, or traversing tools for screw cutting and general purposes ; page 31.
3. Lathes, Descriptions Thirteen to Eighteen, with apparatus for plain and ornamental turning in wood, ivory, &c. ; page 32.

(DETACHED PARTS OF LATHE APPARATUS.)

4. Mandrels, lathe-heads, or headstocks ; page 35.
5. Chucks for fixing works in the lathe ; page 36.
6. Chucks or apparatus for ornamenting works in the lathe ; page 39.
7. Slide rests, principally for ornamental turning in wood and ivory ; with tools and revolving cutters for the same ; page 40.
8. Slide rests, principally for metal turning ; with tools and revolving cutters for the same ; page 42.
9. Miscellaneous lathe apparatus ; page 43.

COMPLETE LATHES, DESCRIPTIONS ONE TO
EIGHTEEN.

The greater number of the Lathes Descriptions, One to Eighteen, are specified as of five-inch center, and which Lathes have bearers 3 feet 6 inches long. Lathes for amateurs and others, are sometimes also made as small as of 3 inch center, and 2 feet 6 inches in length of bearers; and at other times as large as of 7-inch center, and 7 feet in length of bearers. Lathes of these various sizes are also made with frames either of wood or iron.

The 5-inch center lathes, or those of medium size, are however the most generally convenient for amateurs, as they are sufficiently large for the largest pieces of ivory and hardwood commonly met with; and they are also sufficiently large to allow a proportionate degree of strength in the numerous additional apparatus; without on the other hand, becoming from excessive size either unwieldy or inconvenient, as respects the friction of their moving parts.

For occasional purposes, the range of the 5-inch lathe may be increased about one-half as to diameter, by lifting pieces, No. 1631, or about twofold as to length, by lengthening bars, No. 1632; and the 5-inch lathes are also made with iron bearers, exceeding the customary length of 3 feet 6 inches.

In selecting Turning Machinery, many amateurs prefer to begin with a small outfit, and gradually to extend it by successive additions of apparatus. Much of the Turning Machinery is constructed with the object of facilitating this, which may be called the accumulative method; as most of the lathes may be thus advanced, to the condition of some of those higher up in the scale of completeness and price.

For example, it will be seen in the examination of the following descriptions, that the Lathe Description Three (£18), may, by additions, be made equal to any of those not possessing iron bearers. The Lathe Description Five (£35), may be converted into the most complete of those with beech-wood frames; and the Lathe Description Ten (£60), may be rendered, by additions, equal or superior to the Lathe Description Eighteen, the most elaborate of those specified.

It is further to be observed that the Lathes of the different Descriptions, One to Eighteen, will in any case be modified to the extent that may be desired, by the addition, omission, or exchange of apparatus; the descriptions and particulars of which are more fully given in the subsequent pages on DETACHED LATHE APPARATUS.

LATHES DESCRIPTIONS, ONE TO SIX.

INTENDED FOR THE GENERAL PURPOSES OF HAND TURNING.

LATHE DESCRIPTION ONE.

No.			£ s. d.
1483	— Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel. Common popit head. Rest, and one tee. No chucks. The above mounted on a frame of beech-wood, with plain wheel	- - - - -	10 0 0
1484	— Five-inch center lathe, as above	- - - - -	12 0 0
1485	— Six-inch	- - - - -	15 0 0
1486	— Seven-inch	- - - - -	20 0 0

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No.	LATHES—COMPLETE LATHES FOR AMATEURS <i>continued.</i>	£	s.	d.
LATHE DESCRIPTION TWO.				
1487	Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel. Common popit head. Rest and one tee; key and lever. Six metal chucks, and six box-wood chucks. The above mounted on a frame of beech-wood, with plain iron wheel	12	0	0
1488	Five-inch center lathe, as above	14	0	0
1489	Six-inch	17	0	0
1490	Seven-inch	22	0	0
LATHE DESCRIPTION THREE.				
1491	Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel. Common popit head. Rest and two tees; oil can, key and lever. Nine metal chucks, and twelve box-wood chucks. The above mounted on a frame of beech-wood, with hard wood bearers, and single bevel wheel	16	0	0
1492	Five-inch center lathe as above	18	0	0
1493	Six-inch	23	0	0
1494	Seven-inch	30	0	0
LATHE DESCRIPTION FOUR.				
1495	Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel. Common popit head. Rest and two tees; oil-can, key and lever. Fifteen metal chucks, twelve box-wood chucks, and six box-wood spring chucks, with brass rings. The above mounted on a frame of beech-wood, with hard-wood bearers, single bevel wheel, and case with drawers to contain the apparatus	22	0	0
1496	Five-inch center lathe, as above	26	0	0
1497	Six-inch	32	0	0
1498	Seven-inch	40	0	0
LATHE DESCRIPTION FIVE.				
1499	Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel; wooden pulley, with division plate and index. Cylinder popit head, with leading screw, two centers, and flange for boring. Rest and two tees; oil-can, key and lever. Fifteen metal chucks, twelve box-wood chucks, and six box-wood spring chucks, with brass rings. The above mounted on a frame of beech-wood, with iron bearers, double bevel wheel, and a case for the backboard to contain the apparatus	30	0	0
1500	Five-inch center lathe, as above	35	0	0
1501	Six-inch	45	0	0
1502	Seven-inch	60	0	0
LATHE DESCRIPTION SIX.				
1503	Four-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel; wooden pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Boring collar and guide for slender turning. Rest and two tees; oil-can, key and lever. Twenty-one metal chucks; twelve wood chucks, and six box-wood spring chucks with brass rings. The above mounted on a frame of mahogany, with iron bearers, double bevel wheel, and a case for the backboard to contain the apparatus	40	0	0
1504	Five-inch center lathe as above	45	0	0
1505	Six-inch	55	0	0
1506	Seven-inch	70	0	0

N ^o	LATHES—COMPLETE LATHES FOR AMATEURS <i>continued.</i>	L. s. d
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LATHES, DESCRIPTIONS SEVEN TO TWELVE.

WITH TRAVERSING MANDRELS, OR TRAVERSING TOOLS, FOR SCREW CUTTING AND
GENERAL PURPOSES.

LATHE DESCRIPTION SEVEN.

1507 ——	Five-inch center lathe, with iron heads, common screw mandrel not hardened, working in gun-metal collars ; six gun-metal screw guides, and apparatus for the same. Cylinder popit head, with pushing screw, two centers, and flange for boring. Rest and two tees ; oil-can, key, and lever. Nine metal chucks, and twelve box-wood chucks. The above mounted on a frame of beech-wood, with hard-wood bearers, single bevil wheel, and a case for the backboard to contain the apparatus	30 0 0
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LATHE DESCRIPTION EIGHT.

1508 ——	Five-inch center lathe, with iron heads, common screw mandrel not hardened, working in gun-metal collars ; six gun-metal screw guides, and apparatus for the same ; wooden pulley, with division plate and index. Cylinder popit head, with pushing screw, two centers and flange for boring. Rest and two tees ; oil-can, key, and lever. Fifteen metal chucks, twelve box-wood chucks, and six box-wood spring chucks, with brass rings. The above mounted on a frame of beech-wood, with iron bearers, double bevil wheel, and a case for the backboard to contain the apparatus	40 0 0
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LATHE DESCRIPTION NINE.

1509 ——	Five-inch center lathe, with iron heads, best screw mandrel bored throughout, hardened, and working in hardened steel collars ; six steel screw guides, and apparatus for the same ; metal pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and three tees ; oil-can, key, and lever. Fifteen metal chucks, and twelve wood chucks. Mounted on a frame of mahogany, with iron bearers, double bevil wheel, and a case for the backboard to contain the apparatus	50 0 0
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LATHE DESCRIPTION TEN.

1510 ——	Five-inch center lathe, with iron heads, best screw mandrel bored throughout, hardened, and working in hardened steel collars ; six steel screw guides, and apparatus for the same ; metal pulley, with division plate and adjusting index. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and three tees ; oil-can, key, and lever. Twenty-four metal chucks, twelve box-wood chucks, and six box-wood spring chucks, with brass rings. Mounted on a double frame of mahogany, with iron bearers, double bevil wheel, and a case for the backboard to contain the apparatus	60 0 0
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LATHE DESCRIPTION ELEVEN.

1511 ——	Five-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel ; wooden pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and two tees ; oil-can, key, and lever.
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No.	LATHES—COMPLETE LATHES FOR AMATEURS <i>continued.</i>	L.	s.	d.
	Twenty-one metal chucks. Twelve box-wood chucks. Surface chuck with clamps.			
	Slide-rest for turning metal or wood, with either twelve large tools for metal, or twenty-four small for wood. Simple apparatus for cutting screws, by connecting the slide rest and mandrel with change wheels, and six screw tools for the same.			
	The above mounted on a frame of mahogany with iron bearers, double bevel wheel, and a case for the backboard to contain the apparatus	80	0	0

LATHE DESCRIPTION TWELVE.

512 —	Five-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel ; metal pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Boring collar, and guide for slender turning. Rest and two tees ; oil-can, key, and lever.			
	Twenty-four metal chucks. Twelve box-wood chucks, and six box-wood spring chucks with brass rings. Universal chuck with three dies moved simultaneously.			
	Slide-rest for turning metal or wood, with either eighteen large tools for metal, or thirty-six small for wood. Complete apparatus for cutting screws, by connecting the slide-rest and mandrel with several change wheels, and twelve screw tools for the same.			
	The above mounted on a frame of mahogany with iron bearers, double bevel wheel, and a case for the backboard to contain the apparatus	110	0	0

LATHES, DESCRIPTIONS THIRTEEN TO EIGHTEEN.

WITH APPARATUS FOR PLAIN AND ORNAMENTAL TURNING IN WOOD, IVORY, ETC.

LATHE DESCRIPTION THIRTEEN.

No.	LATHES, DESCRIPTION THIRTEEN.	L.	s.	d.
1513 —	Five-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and two tees ; oil can, key and lever.			
	Fifteen metal chucks, twelve box-wood chucks, and six box-wood spring chucks, with brass rings. Common eccentric chuck.			
	Common slide-rest for wood and ornamental turning, with two dozen tools for the same and a set square.			

The above mounted on a frame of beech-wood, with single bevel wheel, and a case for the backboard to contain the apparatus

50 0 0

LATHE DESCRIPTION FOURTEEN.

No.	LATHES, DESCRIPTION FOURTEEN.	L.	s.	d.
1514 —	Five-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel ; wooden pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and two tees ; oil can, key and lever.			
	Fifteen metal chucks. Twelve box-wood chucks, and six box-wood spring chucks, with brass rings.			
	Common slide rest for wood and ornamental turning, two dozen tools for the same and a set square. Drilling instrument and two dozen drills for ornamenting. Vertical cutting frame, and one dozen cutters ; and a mahogany tray for the slide rest tools, drills, and cutters. Overhead motion for driving the revolving cutters.			

The above mounted on a frame of beech-wood, with iron bearers, double bevel wheel, and a case for the backboard to contain the apparatus

70 0 0

No.	LATHES—COMPLETE LATHES FOR AMATEURS <i>continued.</i>	£ s. d.
LATHE DESCRIPTION FIFTEEN.		
1515 — Five-inch center lathe, with iron heads, the mandrel working in a collar and back center of hardened steel ; wooden pulley, with division plate and index. Cylinder popit head, with leading screw, two centers and flange for boring. Rest and two tees ; oil can, key and lever.		
Twenty-one metal chucks. Twelve box-wood chucks, and six box-wood spring chucks, with brass rings.		
Common eccentric chuck.		
Slide-rest for wood and ornamental turning, three dozen tools for the same and a set square. Drilling instrument and three dozen drills for ornamenting. Eccentric cutting frame to screw on the drilling instrument. Vertical cutting frame, two dozen cutters to suit the two cutting frames in common ; and a mahogany case for the slide rest tools, drills, and cutters. Overhead motion for driving the revolving cutters.		
The above mounted on a frame of mahogany, with iron bearers, double bevil wheel, and a case for the backboard to contain the apparatus - - - - -		
95 0 0		
LATHE DESCRIPTION SIXTEEN.		
1516 — Five-inch center lathe, with iron heads, screw mandrel, bored throughout, hardened, and working in hardened steel collars ; six steel screw guides, and apparatus for the same ; metal pulley, with division plate and index, and segment stop. Cylinder popit head, with leading screw, four centers and flange. Boring collar, and guide for slender turning. Rest and three tees ; oil-can, key, and lever.		
Twenty-four metal chucks. Twelve box-wood chucks, and six box-wood spring chucks with brass rings.		
Combined eccentric and oval chuck.		
Slide-rest for wood and ornamental turning ; four dozen tools for the same and a set square. Drilling instrument and four dozen drills for ornamenting. Eccentric cutting frame to screw on the drilling instrument. Vertical cutting frame. Three dozen cutters to suit the two cutting frames in common ; and a mahogany case for the slide-rest tools, drills, and cutters. Overhead motion for driving the revolving cutters.		
The above mounted on a frame of mahogany, with iron bearers, double bevil wheel, and a case for the backboard to contain the apparatus - - - - -		
130 0 0		
LATHE DESCRIPTION SEVENTEEN.		
1517 — Five-inch center lathe, with iron heads, screw mandrel bored throughout, hardened, and working in hardened steel collars ; six steel screw guides and apparatus for the same ; metal pulley, with division plate, adjusting index, and segment stop. Cylinder popit head with leading screw, four centers and flange. Boring collar, and a guide for slender turning. Rest and three tees ; oil-can, key, and lever.		
Thirty metal chucks. Twelve box-wood chucks, and six box-wood spring chucks with brass rings.		
Combined eccentric and oval chuck. Spherical chuck.		
Slide-rest for wood and ornamental turning. Additional apparatus to the same for curvilinear turning. Complete apparatus for cutting screws, by connecting the slide-rest and mandrel with change wheels ; cutter bars with detached cutters for external and internal threads. Six dozen slide-rest tools for general purposes ; six tools for the spherical chuck and a set square.		
Drilling instrument and six dozen drills for ornamenting. Eccen-		

No.	LATHES—COMPLETE LATHES FOR AMATEURS <i>continued.</i>	£ s. d.
	tric cutting frame to screw on the drilling instrument. Vertical cutting frame. Four dozen cutters to suit the two cutting frames in common, and a mahogany case for the slide-rest tools, drills, and cutters. Overhead motion for driving the revolving cutters. Case of instruments for setting straight and angular tools.	
	The above mounted on a double frame of mahogany, with iron bearers, double bevel wheel, and a case with drawers to contain the several apparatus - - - - -	190 0 0
1518 —	LATHE DESCRIPTION EIGHTEEN. Five-inch center lathe, with iron heads, screw mandrel bored throughout, hardened and working in hardened steel collars; six steel screw guides and apparatus for the same; metal pulley, with division plate, adjusting index, and segment stop. Cylinder popit head with leading screw, four centers and flange. Boring collar, and guide for slender turning. Rest and three tees; oil-can, key, and lever.	
	Fifty-four metal chucks. Twenty-four box-wood chucks, and twelve box-wood spring chucks with brass rings. Three transfer chucks, for adapting some of the fixing chucks, to all the chucks for ornamenting.	
	Eccentric chuck. Oval chuck. Spherical chuck.	
	Slide-rest, with cradle to set the same for turning cylinders and surfaces. Additional apparatus to the slide-rest, for curvilinear turning. Complete apparatus for cutting screws, by connecting the slide-rest and mandrel with change wheels; cutter bars with detached cutters for external and internal threads. Twelve dozen slide-rest tools for general purposes, and six tools for the spherical chuck.	
	Drilling instrument, and eight dozen drills for ornamenting. Eccentric cutting frame to screw on the drilling instrument. Universal cutting frame. Vertical cutting frame. Horizontal cutting frame, and three spindles. Six dozen cutters to suit the four cutting frames in common. One dozen additional cutters for the horizontal cutting frame; and a mahogany case for the slide-rest tools, drills, and cutters. Overhead motion for driving the revolving cutters. Case of instruments for setting straight and angular tools. Case of instruments for setting bead tools and drills.	
	The above mounted on a double frame of mahogany, with iron bearers; double bevel wheel, and a case with drawers to contain several apparatus - - - - -	260 0 0

DETACHED PARTS OF LATHE APPARATUS.

To suit the convenience of different Amateurs, many of the detached parts of Lathe Apparatus are made of various forms and constructions, some of which are very complete and elaborately finished, and others are less complete and more plainly finished, but are nevertheless of good, sound, and useful character. The further particulars of these differences will be given on application.

Frequent disappointments have been experienced by Amateurs, particularly those resident in foreign countries, from H. and Co. being unable satisfactorily to supply some of the Detached parts of Lathe Apparatus that may be written for, on account of the necessity of such Additional Apparatus being fitted to the neighbouring parts of the Turning Machinery, with which they are required to be associated.

Much of the inconvenience has been from time to time swept away, by modifications introduced in several constructions, in order to

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No.	LATHES—DETACHED PARTS OF LATHE APPARATUS continued.	£ s. d.
	make such parts of the Apparatus more nearly independent of each other. And to prevent, so far as possible, misapprehension and disappointment, each of the Detached parts of Lathe Apparatus, Nos. 1519 to 1643, is followed by a letter of reference, intended to direct attention to one of the following notes:—	
A.	These Apparatus may be supplied independently of the corresponding parts, and without apprehension of disagreement.	
B.	These Apparatus may be supplied independently, but a trifling and unimportant risk is then incurred of their disagreement; but which disagreement may, in most cases, be corrected by the Amateur himself.	
C.	These Apparatus can be supplied, provided certain measurements and particulars are previously transmitted.	
D.	These Apparatus can be supplied, in a modified and nearly finished state, together with instructions as to how the Amateur may complete and adapt them himself.	
E.	These Apparatus, as at present constructed, cannot be supplied, or at any rate, cannot be supplied in a satisfactory manner, unless the neighbouring parts of the Turning Machinery, with which they are to be used, are transmitted to H. and Co., to enable the new work to be fitted.	

MANDRELS, LATHE HEADS, OR HEADSTOCKS.

(A.) COLLARS AND MANDRELS TO BE MOUNTED IN WOODEN HEADSTOCKS.

1519	COLLARS AND MANDRELS for soft-wood turning and common purposes, to be mounted in detached wooden headstocks. The collars and mandrels are charged as follows:—	
	Sizes - - - 8 9 10 12 14 16 18 inch.	
	With outside screws 27s. 30s. 33s. 36s. 42s. 54s. 78s. each.	
	With inside screws 30s. 33s. 36s. 40s. 48s. 60s. 88s. each.	
	The center screws and pulleys are charged extra.	A.

(B.) LATHE HEADS OF CAST IRON FOR GENERAL PURPOSES.

1520	Three-inch center lathe heads, not japanned; the mandrel working between a steel collar and back center, wood pulley; popit head with center screw; and a rest with two tees for hand turning. <i>The Set.</i>	A.
1521	Four-inch lathe heads as above - - - - -	5 0 0
1522	Five-inch - - - - -	6 0 0
1523	Six-inch - - - - -	7 0 0
1524	Seven-inch - - - - -	9 0 0
1525	LATHE HEADS, three to seven inch as above, with metal pulleys and division plates, and with common or best cylinder popit heads - -	12 0 0
1526	LATHE HEADS FOR HEAVY METAL TURNING, working either in brass cylindrical bearings, or in two conical collars of steel after Clements's method, and fitted with secondary spindles, or gearing for slow motion - - - - -	A.

(C.) LATHE HEADS, AND APPARATUS FOR SCREW CUTTING.

1527	COLLARS AND MANDRELS FOR SCREW CUTTING, or Tunbridge screw mandrels, for soft-wood turners; to be mounted in detached wooden heads, after the manner of No. 1519. There are from four to eight guide screws cut upon the mandrel, the neck of which is cylindrical, so that it may traverse through the collar when the back center screw is withdrawn - - - - - From £ 5 10 0 to	7 10 0
	The center screws and wood-work are charged extra - - - - -	A.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.

- LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*
- 1528 —— FOUR-INCH CENTER LATHE HEAD, with traversing or screw mandrel, not hardened, and working in cast iron; six brass screw guides, with suitable apparatus to work in white metal; common popit head; rest and two tees - - - - - ▲.
- 1529 —— Five-inch, the same as above.
- 1530 —— Six-inch - - - - -
- 1531 —— Seven-inch - - - - -
- 1532 —— FOUR-INCH CENTLR LATHE HEAD, with traversing or screw mandrel working in gun-metal collars; six gun-metal screw guides, with suitable apparatus to work in brass; pulley, with division plate, and index; cylinder popit head, with pushing screw and two centers; rest and two tees - - - - - ▲.
- 1533 —— Five-inch, the same as above.
- 1534 —— Six-inch - - - - -
- 1535 —— Seven-inch - - - - -
- 1536 —— FOUR-INCH CENTER LATHE HEADS, with traversing or screw mandrel bored throughout, hardened, and working in hardened steel collars; with six steel screw guides, and apparatus for the same; metal pulley, with division plate and index; cylinder popit head, with leading screw, two centers, and flange; rest and three tees - - - - - ▲.
- 1537 —— Five-inch, the same as above.
- 1538 —— Six-inch - - - - -
- 1539 —— Seven-inch - - - - -
- 1540 —— APPARATUS FOR SCREW CUTTING, to be added to lathes with or without traversing mandrels, by connecting the mandrel to the screw of the slide-rest, by a series of change wheels, arranged in a simple form, for a small number of screws of the ordinary threads for mechanism - - - - - E.
- 1541 —— APPARATUS FOR SCREW CUTTING, arranged in a much more complete form than No. 1540, with additional change wheels and mechanism, so as to serve for cutting right and left-hand screws, of great numbers of pitches.
- The finest threads or pitches, namely, from 100 to 300 to the inch, are employed for self-acting turning, or turning smooth cylinders mechanically; the threads somewhat coarser, say from 2 to 50 threads to the inch, are used for cutting the ordinary screws required in mechanism; and the coarsest threads or pitches, from 1 inch to 7 inches rise in each revolution, are employed, in conjunction with revolving and figured cutters, for making twisted or helical works, which are also known as of the Elizabethan style of decoration. This apparatus has also the power of cutting screws at the ends of long rods, and is an extremely useful adjunct to lathes, whether they are used for plain or for ornamental turning - - - - - H.

CHUCKS FOR FIXING WORKS IN THE LATHE.

They are arranged in five groups; those used exclusively either for works in wood, or for works in metal, are designated accordingly: the others are more or less used for each of these materials and for general purposes.

Although all Lathes of the same size, say of five-inch center, have their screws exactly alike, as to diameter and thread, it is only by mere accident that the same Chuck runs truly upon two different Lathes. It is therefore highly desirable that all Chucks should be fitted to, and turned upon, the particular mandrel for which they are intended.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.

LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*

Of the Chucks, Nos. 1542 to 1593, a few requiring a secondary degree of accuracy, are sometimes supplied independently of the Lathe; and some others, requiring greater accuracy, are supplied in a modified and nearly finished state, together with instructions for their completion or adaptation by the Amateur himself. (See Notes A to E, page 35.)

(A.) FIXING CHUCKS FOR LONG OBJECTS SUPPORTED AT BOTH ENDS.
(The popit head always required.)

- | | |
|---|----|
| 1542 —— PRONG CHUCKS, for common and preparatory works in wood - - - | B. |
| 1543 —— FLANGE CHUCK WITH POINTS, for similar but larger works in wood - - - | B. |
| 1544 —— SQUARE HOLE CHUCKS, for many works in metal and wood, in which the centers are not required to be retained - - - - | B. |
| 1545 —— CENTER OR DRIVER CHUCKS, for numerous works in metal that are turned between two centers. The driver chucks require carriers variously constructed with one, two, or four screws, to cause the mandrel, the chuck, and the work, to rotate together - - - - | E. |
| 1546 —— CLEMENT'S DOUBLE DRIVER CHUCK, a more accurate form of the above; rewarded by the Society of Arts. (See their Transactions, Vol. 47, p. 131.) - - - - | E. |

(B.) FIXING CHUCKS FOR LONG OBJECTS SUPPORTED AT ONE END.
(The popit head occasionally used also.)

- | | |
|--|----|
| 1547 —— DIE CHUCK WITH TWO SLIDES placed diametrically, for small pieces not exceeding about $\frac{1}{2}$ inch diameter - - - - | E. |
| 1548 —— DIE CHUCK WITH ONE SLIDE, for works of any size below about an inch in diameter; and with a diametrical adjustment, convenient for turning short works from two or more centers - - - - | E. |
| 1549 —— MORDAN'S SELF-CENTERING WIRE CHUCK, for small pieces below $\frac{1}{4}$ inch diameter, and which are fixed at once centrally by this Chuck - - - - | E. |
| 1550 —— DIE CHUCK WITH ROUND HOLE AND SPLIT DIES, bored $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{4}$, &c., to $\frac{1}{4}$ inch diameter, for fixing wires, and other pieces of those respective diameters, exactly central - - - - | E. |
| 1551 —— SCREW CHUCKS, WITH PINCHING SCREWS. Either with four screws placed radially and in one plane, or with six or eight screws in two planes. Made of various sizes to serve for pieces from about $\frac{1}{4}$ to 5 or 6 inches diameter, and also for irregular pieces - - - - | B. |

(C.) FIXING CHUCKS FOR SHORT OBJECTS, AND FOR PLATES OR DISKS GRASPED BY THEIR EDGES.*(C. 1.—Depending alone on the elasticity of the chuck, or of the work to be fixed.)*

- | | |
|--|----|
| 1552 —— PLAIN WOOD CHUCKS, that are turned out to the exact diameters of the objects to be chucked, which are then fixed by a few light blows. The largest wood chucks have metal flanges to fit the screw of the mandrel, the smallest have external screws to fit the brass-receiving chucks - - - - | A. |
| 1553 —— PLAIN BRASS CHUCKS, called also Driving, or Cup-Chucks. These are used alone, for pieces of wood that have been roughly prepared with the hatchet, &c. Or the brass plain chucks are fitted with wood-stoppers, that are turned out to fit circular pieces of wood or metal - - - - | A. |
| 1554 —— ARBOR CHUCKS OF STEEL OR BRASS, for beads, rings, washers, and objects with central holes, which are driven upon the arbor chucks - - - - | D. |

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

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No.

LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*(C. 2.—*With a small power of central contraction or expansion.*)

- 1555 — SPRING CHUCKS OF BOX-WOOD, WITH BRASS RINGS AND FERULES. The spring chucks are divided like the staves of a cask, and are turned out to fit thin and nearly-finished works, that will not bear rough usage, nor to be clucked with the hammer, as in common driving chucks, Nos. 1552 and 1553 A.
 1556 — SPRING CHUCKS OF BRASS WITH STEEL RINGS, for works of definite diameters that require to be ornamented on the eccentric and other chucks E.
 1557 — ARBORES WITH CONES AND SCREWS, for fixing collars, pulleys, &c., concentrically, by their inner surfaces, or edges E.
 1558 — HICK'S EXPANDING MANDRELS, for similar purposes to No. 1557 ; rewarded by the Society of Arts, 1840 A.
 1559 — YUILE'S EXPANDING MANDRELS A.
 1560 — BELL'S EXPANDING MANDRELS A.

(C. 3.—*With a considerable power of adjustment, central or otherwise.*)

- 1561 — SURFACE CHUCKS WITH DOGS AND SIDE SCREWS D.
 1562 — UNIVERSAL CHUCKS, with two or four jaws, moved by leading or clamping screws, acting independently of each other D.
 1563 — UNIVERSAL CHUCKS of different dimensions and constructions, with three slides or jaws, that are moved simultaneously, and equally to or from the center D.

(D.) FIXING CHUCKS FOR OBJECTS THAT ARE FIXED AGAINST ONE OF THEIR SURFACES.

- 1564 — STEEL WORM CHUCK, with a conical screw like that of a gimlet, for holding pieces of plank wood, and short thick pieces B.
 1565 — DOUBLE SCREW CHUCKS IN PAIRS, of various sizes, as for the screws of stop-cocks, and the small screwed parts of numerous works, in wood, ivory, metal, &c. CYLINDER BITS AND TAPS for cutting the inside screws to correspond with the double screw chucks E.
 1566 — DOUBLE SCREW CHUCKS, similar to the above but larger, and without screw taps E.
 1567 — ARBOR CHUCKS WITH NUTS AND WASHERS, for holding various works that have central holes E.
 1568 — ARBOR CHUCKS WITH CONES AND SCREWS. These grasp less strongly than the last, but have the power of adjusting the work centrally E.
 1569 — DISK CHUCKS INVENTED BY PROFESSOR WILLIS, combining the adjustment for center of the chucks, No. 1568, and the strong grasp of the chucks, No. 1567. The disk chuck is convenient, amongst other uses, for fixing disks, at the time of cutting their edges into teeth for wheels, &c. E.
 1570 — SURFACE CHUCKS OF WOOD OR METAL, for thin works, that require to be attached by cement E.
 1571 — SURFACE CHUCKS with various assortments of clamps and screws for fixing works, so that their flat surfaces rest against the chuck. Additional contrivances, or vertical clamps, for holding pieces at right angles to the surface chucks. Surface chucks, which are also called face-plates, are very much required for works in metal D.

(E.) FIXING CHUCKS FOR DRILLS, CIRCULAR CUTTERS, &c.

- 1572 — DRILL CHUCKS, with round or square holes, for sets of drills and countersinks, to be used for metal and wood D.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.

LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*

- 1573 —— BORING BIT CHUCKS, each carrying one boring bit, such as are used by carpenters - - - - - E.
 1574 —— PAD CHUCK, with square hole and spring-catch, for carrying sets of carpenter's bits - - - - - E.
 1575 —— ARBOR CHUCKS, for small circular cutters or saws, used for notching the heads of screws, and for other purposes - - - - - E.
 1576 —— TRANSFER CHUCKS, to enable several of the ordinary fixing chucks to be used indiscriminately upon the lathe mandrel, the eccentric chuck, or any other of the chucks for ornamenting; so that the work may be commenced on the mandrel, and then transferred to any of the latter chucks, without being thrown out of truth or centrality - - - - - E.

CHUCKS OR APPARATUS FOR ORNAMENTING WORKS IN THE LATHE.**(A.) CHUCKS USED PRINCIPALLY FOR ORNAMENTING FLAT SURFACES.**

- 1577 —— ECCENTRIC CHUCK of simple construction - - - - - D.
 1578 —— ECCENTRIC CHUCK of the best construction, either with Ratchet and Detent, or else with Screw-wheel and Tangent-screw - - - - - D.
 1579 —— OVAL CHUCK of simple construction, and without Graduated Wheel - E.
 1580 —— OVAL CHUCK of the best construction, with Ratchet or Screw-wheel - B
 1581 —— COMBINED ECCENTRIC AND OVAL CHUCK, used both for simple Eccentric and for Oval Work - - - - - E.
 1582 —— COMPOUND ECCENTRIC CHUCK, for Simple or Compound Eccentric Work. Of the pattern proposed and described by J. H. Ibbetson, Esq., in his work entitled "Specimens of Eccentric Turning" - D.
 1583 —— "Specimens of Eccentric Turning," with illustrations. Octavo 1*l.* 1*s.*
 1584 —— COMPOUND ECCENTRIC AND OVAL CHUCK, for simple and compound Eccentric work, and simple and compound Oval work. H. & Co.'s Pattern - E.
Few lathes have more than two of the above chucks, and the best lathes generally have Nos. 1578, 1580, and 1584.
 1585 —— GEOMETRIC CHUCK OF SIMPLE CONSTRUCTION, after the manner of No. 1586. It serves for Eccentric patterns, for Ovals, and a limited number of Epicycloidal or looped figures - E.
 1586 —— GEOMETRIC CHUCK, of the construction invented by I. H. IBBETSON, Esq. This chuck is greatly superior to that last noticed, in point of mechanical details, number of parts, and comprehensiveness. It has about 40 change wheels, independently of those permanently attached to the chuck, and makes patterns with 1, 2, 3, 4, to 36 loops—38, 40, 42, to 84, and many others up to 256 consecutive loops in the circle. Other combinations give circulating or overlapping loops - E.
 1587 —— Additional Tangent Screw movement, for the adjustment of the eccentricity of the pattern, and a case for containing the chuck, with partitions for the whole of its parts. - E.
 1588 —— A second and smaller chuck (called the second part), is sometimes united with the *first part*, and used for compound or double epicycloidal patterns. Also a *third part* may also be added; this is placed intermediately, to cause the equal distribution of the loops in the compound patterns, as in the ellipsis and looped figures of low numbers - E.
 1589 —— Ibbetson's "Brief Sketch;" a pamphlet containing several specimens of the performance of the first part of the geometric chuck 5*s.* - E.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.	LATHES—DETACHED PARTS OF LATHE APPARATUS <i>continued.</i>	
1590	STRAIGHT LINE CHUCK, with reciprocating action; of improved construction, in which the slide may be screwed on the mandrel as an ordinary chuck at the time of fixing and surfacing the work, preparatory to its being ornamented with rectilinear patterns - - -	E.
1591	STRAIGHT LINE CHUCKS, worked by the continuous revolution of the lathe mandrel - - - - -	E.
	(B.) CHUCKS USED PRINCIPALLY FOR ORNAMENTING CURVED SURFACES.	
1592	PILLAR FLUTING CHUCK, called also pencil-case chuck, for ornamenting the surface of cylinders, cones, prisms, and pyramids, with the revolving cutters or with the rose-engine - - - - -	B.
1593	Spherical Chuck, for ornamenting hemispheres and other pieces having spherical surfaces; and also some other curvilinear surfaces, such as convex, concave, and mixed mouldings, &c.	
	In the most improved Spherical Chuck, the head with the tangent screw, is swivelled so as to be placed at all angles, to save the necessity of employing the spherical chuck and eccentric chuck in combination. The Spherical Chuck is used both with fixed slide-rest tools, and revolving cutters; and, as well as the Pillar Fluting Chuck, No. 1592, is applicable to some prismatic and pyramidal works, whether plain or ornamented - - - - -	

SLIDE RESTS, PRINCIPALLY FOR ORNAMENTAL TURNING IN WOOD
AND IVORY;

WITH TOOLS AND REVOLVING CUTTERS FOR THE SAME.

The sliding rests, Nos. 1594 to 1598, although principally intended for wood and ivory, are sufficiently strong for small works in metal, and they are also made of 4 and 6-inch sizes.

They have receptacle slides, intended to receive the small tools for wood and ivory Nos. 1602, the larger tools for metal 1603 and 1604, or the revolving cutters, 1605 to 1615, most of which are made of the same size, whether used for 4, 5, or 6-inch lathes, and can be supplied independently of the slide-rest.

The screws and divisions of these slide-rests are all read off in tenths and hundredths of the inch.

The sliding rests, Nos. 1594 to 1596, may be supplied independently of the lathe, and No. 1596 is convertible into No. 1597, by the addition of the cradle. No. 1598 is a re-construction of the Slide Rest, differing in some points from the above.

(A.) SLIDING RESTS FOR WOOD AND ORNAMENTAL TURNING.

1594	FIVE-INCH SLIDE-REST, of simple construction, adapted only to plain turning, or such works as may be executed with small fixed tools	A
1595	FIVE-INCH SLIDE REST, made principally in cast iron, with a gunmetal receptacle slide, having sliding clamps, bar, and screws, to hold small or large tools, or the several revolving cutters. The receptacle slide is moved by a lever, and has guide and stop-screws to regulate the penetration of the cutting tools - - - - -	A.
1596	FIVE-INCH SLIDE REST similar to the above, but of improved construction. The main slide is longer, and of wrought iron, and has an elevating screw for adjusting the tool for height of center. The remainder of the work is constructed principally in brass and steel, and finished in the best manner - - - - -	A.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.

LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*

- 1597 —— FIVE-INCH SLIDE REST similar to the last, but with a cradle and additional contrivances, for setting the rest for turning surfaces and cylinders ; and a collar, to place the upper slide either under the guidance of a leading screw, or of the lever, at pleasure - - - - -
 E.
- 1598 —— COMPOUND SLIDE REST, comprising all the above provisions, with the additional means of placing both the main and cross slides, at all angles to the lathe bearers and to each other - - - - -
 E.

(B.) ADDITIONAL APPARATUS TO ANY OF THE ABOVE.

These require to be fitted to the Slide Rest for which they are intended.

- 1599 —— FLUTING STOPS, with and without screw adjustments, to determine the length of traverse given to revolving drills and cutters, in fluting and ornamenting works - - - - -
 E.
- 1600 —— APPARATUS FOR CURVILINEAR TURNING, after the method introduced by F. RONALDS, Esq. In this effective apparatus, templets or shaper plates are used, to govern the motion of the receptacle slide that carries the tools or revolving cutters - - - - -
 E.
- 1601 —— APPARATUS FOR CUTTING SCREWS AND TWISTED WORKS, by a system of change wheels, that serves to connect the slide rest with the mandrel of the lathe. (See Nos. 1540 and 1541.) - - - - -
 E.

(C.) FIXED TOOLS FOR THE SLIDE RESTS FOR WOOD AND ORNAMENTAL TURNING.

- 1602 —— SMALL SLIDE REST TOOLS, for wood-work and ornamental turning, made of several patterns, and also in sets of 3, 6, 9, or 12 dozen, contained in trays or cases, with separate compartments - - - - -
 A.
- 1603 —— LARGE SLIDE REST TOOLS, for deep holes, and occasional purposes in wood ; and other tools for small works in metal - - - - -
 A.
- 1604 —— CUTTER BARS, with shifting triangular blades for metal turning. (See also Nos. 1620 to 1624) - - - - -
 A.

(D.) REVOLVING TOOLS OR CUTTERS FOR THE SLIDE RESTS FOR ORNAMENTAL TURNING.

*The following instruments are enumerated in the order in which they are generally supplied, the first being the most in requisition.**They are each made of two or three grades as to completeness and expense, and of the same size, whether they are used for 4, 5, or 6-inch center lathes.**All these revolving cutters require the lathe to be provided with the division plate and index, and also with the overhead motion for driving them from the foot wheel. The tools 1606 to 1608, should be fitted to their respective instruments.*

- 1605 —— DRILLING INSTRUMENTS in steel stems that fit the Receptacle Slides of slide-rests, Nos. 1595 to 1598 - - - - -
 A.
- 1606 —— Drills for the same for perforating wood and metal - - - - -
 E.
- 1607 —— Drills for the same, of about 40 different patterns or figures, for ornamenting work - - - - -
 E.
- 1608 —— Bent and side cutters for the drilling instrument - - - - -
 E.
- 1609 —— ECCENTRIC CUTTING FRAME, made to apply to the drilling instrument, or to act independently of the same - - - - -
 B.
- 1610 —— UNIVERSAL CUTTING FRAME, in which the cutters may be made to revolve in the vertical, the horizontal, and any intermediate plane. The instrument is constructed either with a toothed wheel and pinion, or with guide-pulleys - - - - -
 A.
- 1611 —— VERTICAL CUTTING FRAME, a more simple and compact instrument than the above, but adapted to the vertical position only - - - - -
 A.

N.B.—The marginal letters A., B., C., D., E., refer to notes on page 34.

- No.
LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*
- 1612 — HORIZONTAL CUTTING FRAME, with three spindles and guide-pulleys. The one spindle used with small cutters; another with regular slide-rest tools, and for large diameters, not exceeding four inches; the third spindle is used with circular cutters, for cutting the teeth of wheels, grooves, and other small works in metal - - - A.
- 1613 — INTERNAL CUTTING FRAME, either added to the drilling instrument, No. 1605, or constructed independently - - - - - A.
- 1614 — CUTTERS that apply in common to the Vertical, Universal, Horizontal, and Internal cutting frames - - - - - A.
- 1615 — COMPOUND ECCENTRIC CUTTING FRAME on a new construction, invented by R. O. C. NEWENHAM, Esq., which applies to the sides and ends of cylinders, prisms, curved figures, &c., after the same manner as the common eccentric chuck to flat surfaces - - - - - A.
- 1616 — OVERHEAD MOTION or DRILLING FRAME, on the suspension or other plans, suitable to driving the revolving cutters by means of the foot-wheel of the lathe - - - - - C.

**SLIDE RESTS PRINCIPALLY FOR METAL TURNING,
WITH TOOLS AND REVOLVING CUTTERS FOR THE SAME.**

(A.) **SLIDE RESTS FOR METAL TURNING.**

- 1617 — SLIDE RESTS FOR METAL TURNING, made very long and strong in the slides, and with Professor Willis's tool-holder, by which the tool may be inclined at any angle. When made of the full size, they serve to turn works of the following dimensions:—
 Those for 3½, 4, 5, 6, 7-inch lathes
 Are adapted to surfaces of 7, 8, 10, 12, 14 inches diameter.
 — cylinders of 5, 6, 8, 10, 12 inches long. They may be set to every angle for turning cones - - - - - C.
- 1618 — SLIDE RESTS FOR 5 & 6-INCH LATHES, similar to the above, but somewhat lighter, and of a little less range in the slides. They are furnished, if required, with a receptacle slide and lever movement, intended to receive the various revolving cutters, Nos. 1605 to 1615, so that the same slide-rest may be used, either for ordinary metal turning, or for ornamental turning in wood and ivory. - - - - - C.
- 1619 — APPARATUS FOR CUTTING SCREWS AND TWISTED WORKS, by a system of change wheels to connect the slide-rest with the mandrel of the lathe. (See Nos. 1540 and 1541.) - - - - - E.

(B.) **FIXED TOOLS FOR THE SLIDE-RESTS FOR METAL TURNING.**

- 1620 — PLAIN SLIDE-REST TOOLS of the usual forms, and of various degrees of strength - - - - - C.
- 1621 — CUTTER BARS WITH SHIFTING TRIANGULAR BLADES, for the general purposes of metal turning, H. and Co.'s pattern - - - - - C.
- 1622 — CUTTER BARS WITH SHIFTING CUTTERS, for external and internal works of various kinds, including those cutter bars contrived by Professor Willis, C. Babbage, Esq., and others - - - - - C.
- 1623 — CUTTER BARS WITH SHIFTING CUTTERS FOR EXTERNAL SCREWS with square and angular threads; so that the tool may be placed at the exact rake or inclination of the thread. H. and Co.'s pattern - - - - - C.
- 1624 — CUTTER BARS WITH SHIFTING CUTTERS FOR INTERNAL SCREWS with square and angular threads - - - - - C.

(C.) **REVOLVING CUTTERS FOR THE SLIDE-RESTS FOR METAL WORK.**

- 1625 — APPARATUS FOR CUTTING THE TEETH OF WHEELS of almost every kind, and for cutting grooves. The spindle to be worked either by

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

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No.	LATHES—DETACHED PARTS OF LATHE APPARATUS <i>continued.</i>	
	a band alone, or by wheel and pinion movement for greater power. Cutters to order, either circular for grooving, to be followed by straight cutters for rounding the teeth; or circular cutters, for cutting and rounding the teeth at the same time - - - - -	C.
1626 —	APPARATUS FOR DRILLING SERIES OF HOLES, cutting circular recesses, facing nuts, and various shaping processes, required in works of metal. Drills, countersinks, and face-cutters to order - - - - -	C.
1627 —	APPARATUS COMBINING THE PURPOSES OF THE LAST Two, modified by H. & Co. from PROFESSOR WILLIS's Original Scheme. It has a vertical slide, upon which the cutter spindles are mounted in various positions; or the work may be attached to the vertical slide, and presented to drills, &c., carried by the mandrel; which capabilities, combined with the two horizontal movements of the slide-rest, and the dividing plate of the lathe, constitute a most comprehensive and useful arrangement - - - - -	C.
1628 —	DRIVING GEAR for the above apparatus, of various kinds, to serve either for the foot-wheel of the lathe, for a hand fly-wheel to be turned by an assistant, or for other power - - - - -	C.

MISCELLANEOUS LATHE APPARATUS.

1629 —	BORING COLLAR, for boring out long works that require the holes to be accurately central; used also in boring or turning tubular pieces that are too long to be supported by the mandrel alone - - - - -	B.
1630 —	GUIDES FOR SLENDER TURNING, and back stays of various constructions, for supporting works that spring from the tool, when held only between the mandrel and front center. This apparatus is generally constructed in connexion with the boring collar - - - - -	B.
1631 —	LIFTING PIECES of wood or iron, to raise the five-inch lathe one, two, or three inches, and additional holding down bolts, to serve for turning occasional works not exceeding sixteen inches diameter. These parts are made in the same proportion for larger or smaller lathes - - - - -	C.
1632 —	LENGTHENING BARS, OR LENGTHENING BEARERS, variously constructed, so that the lathe may be made to serve for occasional works, of nearly twice the length of those to which it would be otherwise applicable - - - - -	C.
1633 —	OVERHEAD MOTION or drilling frame, on the suspension plan and other constructions, to serve for driving the revolving cutters, Nos. 1605 to 1615, intended for wood, ivory, and ornamental work - - - - -	C.
1634 —	OVERHEAD MOTION, and driving gear of various kinds, suitable to the revolving cutters for metal work, Nos. 1625 to 1627 - - - - -	C.
1635 —	BACK RESTS, affixed to lathes for the support of the person when at work. This assistance is commonly used by turners in soft wood, to give them a steady position when at work - - - - -	C.

MISCELLANEOUS LATHE APPARATUS FOR THE DIVISION OF CIRCLES INTO EQUAL PARTS.

1636 —	DIVIDING PLATES of all diameters for lathe mandrels, and drilled with circles of holes for dividing circles into various numbers of equal parts - - - - -	C.
1637 —	COMMON INDEXES, AND SLIDING OR ADJUSTING INDEXES to the above - - - - -	C.
1638 —	DIVIDING OR COUNTING INDEX, to prevent errors in using the division plate - - - - -	C.
1639 —	MICROMETER INDEX, for fine adjustments, and for interpolation, or for the production of numbers which are not aliquot parts of the divisions on the dividing plate - - - - -	C.

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

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No.

LATHES—DETACHED PARTS OF LATHE APPARATUS *continued.*

- 1640 —— COMPENSATING INDEX, for the equal division of the ellipsis, invented by J. H. Ibbetson, Esq.; being an appendage to the drilling and cutting apparatus E.
- 1641 —— DIVIDING ENGINE, for the lathe mandrel; constructed with a worm wheel and tangent screw, and either with various micrometers, or ratchet-wheels, for producing the principal divisions of the circle E.
- 1642 —— DIVIDING ENGINE, with worm wheel, tangent screw, and sets of change wheels. The most complete of these apparatus are so arranged, that all numbers below 1000 (with the exception of the few prime numbers above 61, and the multiples of these primes by 2, 3, 4, &c.), are obtained rapidly, and without risk of error, generally by one exact revolution of a stop wheel. Tables of the settings for divisions below 500, are furnished with the apparatus E.
- 1643 —— SEGMENT ENGINES of different kinds, for various works, consisting of arcs of circles D.
- 1644 LUND'S Vertical Sawing Machine. (See No. 1822.)

N.B.—The marginal letters A, B, C, D, E, refer to notes on page 34.

No.		From £ s. d.	To £ s. d.
1645	MACHINES, ENGINES, AND TOOLS, for Boring, Drilling, Grinding, Sawing, Screw-cutting, Shaping, Planing, Turning, Wheel cutting, &c. See Boring, Drilling, &c.		
1646	Machines, Engines, and Tools, of any kind differing from those specified, made to drawings or models.		
1647	MALLETS of beech-wood and hard-wood, for joiners, turners, and others; some of them with metal ferrules to add to their weight	Each 0 1 6	0 10 0
1648	MARQUOIS'S SCALES. (See Drawing Instruments, No. 1295.)	0 10 0	0 18 0
1649	MEASURING INSTRUMENTS, in very great variety, are detailed under the following heads:—namely,		
	Bevils.	Gages.	
	Callipers.	Rules.	
	Compasses.	Spirit Levels.	
	Dividers.	Squares.	
	Drawing Instruments.	Straight Edges.	
	Plumb Bobs.	Tape Measures, &c.	
1650	MEASURING TAPES, from 20 to 100 feet long	Each 0 5 0	0 15 0
1651	Measuring Tapes as above, with turn-over handles and rollers; some of them with multiplying wheels to hasten the winding up	Each 0 7 6	1 4 0
1652	CHESTERMAN'S AND BOTTOM'S Patent Wire Tapes, from 20 to 100 feet long, with metallic wires woven into the tapes, to prevent their elongation	Each 0 10 0	1 10 0
1653	CHESTERMAN'S Spring Tape Measures, from 3 to 6 feet long, mounted in brass, electrum, ivory, tortoiseshell, and silver	0 4 0	1 10 0
1654	MINERALOGICAL HAMMERS. (See Geological Instruments, Nos. 1396 to 1401.)	Each 0 4 6	0 10 0
1655	MITRE BLOCKS for sawing and planing, and also joiner's Shooting Boards	Each 0 6 0	0 15 0
1656	MODELLING AND CARVING TOOLS, in great variety, for works in clay, cork, ivory, marble, the metals, pasteboard, plaster, stone, wax, wood, &c., supplied either separately, or in sets to order	The set 0 10 0	4 0 0
1657	MORDAN'S CENTRAL WIRE CHUCK, rewarded by the Society of Arts. (See No. 1549.)		
1658	MORTARS of hardened steel, for Lapidaries and Seal Engravers. (See No. 1234.)	1 1 0	1 18 0

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No.			From £ s. d.	To £ s. d.
1659	MUSICAL STAMPS, or CHARACTERS, for engraving or punching the pewter plates from which music is generally printed	<i>The set</i>	1 10 0	3 10 0
1660	NEEDLES, Packing Needles	<i>Each</i>	0 0 2	0 0 4
1661	— Upholsterers'	<i>Each</i>	0 0 6	0 1 0
1662	NETTING VICES, and various others, to affix to the Table, with a variety of useful appendages and contrivances, that are also useful in making Fishing Flies	<i>Each</i>	0 2 0	1 10 0
1663	NEWENHAM'S (R. O. C., Esq.) COMPOUND ECCENTRIC CUTTING FRAME. (See Lathe Apparatus, No. 1615.)			
1664	NICHOLLS'S improved hooks and eyes for catgut bands. (See No. 1462.)	<i>The Set</i>	0 2 3	0 7 0
1665	NICHOLLS'S improved cramp for joiners' use. (See No. 1146.)		1 10 0	3 10 0
1666	NICHOLSON'S centro-linead. (See Drawing Instruments, No. 1306.)	<i>Each</i>	1 8 0	1 12 0
1667	NIPPERS for wire, of various forms and sizes	<i>The pair</i>	0 2 0	0 4 6
1668	— Nail Nippers, with curved blades for the dressing-case. (See Cutlery, No. 1219.)	<i>The pair</i>	0 4 6	0 8 0
1669	— Sugar Nippers, with or without stands		0 5 0	0 12 0
1670	NUTS; Betel nuts, Corosos or vegetable ivory nuts, and Coquilla nuts, used in turning	<i>The dozen</i>	0 2 0	0 6 0
1671	NUT CRACKERS of Steel or Plated. (See Cutlery, No. 1220.)	<i>The pair</i>	0 2 6	0 9 0
1672	O'BRIEN'S substitute for the centro-linead. (See No. 1307.)		0 12 0	1 0 0
1673	ODONTAGRAPH, an instrument for setting out the teeth of wheels, invented by the Rev. Prof. Willis. (See No. 2066.)			
1674	OIL FOR MACHINERY, and Brick Oil for Lapidaries	<i>The bottle</i>	0 2 6	0 5 0
1675	— Oil Cans and Pins, with spouts or with capillary tubes	<i>Each</i>	0 1 6	0 5 0
1676	OILSTONES, Turkey and common oilstones, with or without cases of beech or mahogany	<i>Each</i>	0 5 0	2 6
1677	Oilstone slips, for sharpening gouges and moulding tools with curvilinear edges	<i>Each</i>	0 1 0	0 2 6
1678	PAINTER'S TOOLS. (See Glazier's Tools, No. 1406 to 1415.)			
1679	PARALLEL RULES. (See Drawing Instruments, No. 1296.)		0 2 0	1 10 0
1680	PARALLEL VICES for the Table. (See Vices, Nos. 2042 and 2043.)	<i>Each</i>	1 10 0	6 0 0
1681	PARING KNIVES with eyes, used for preparing wood for Turners and others	<i>Each</i>	0 7 0	0 10 6
1682	PEN MAKING INSTRUMENTS. (See Cutlery, No. 1221.)		1 0 0	1 16 0
1683	PENTAGRAPHS for drawing, &c. (See Nos. 1289 and 1290.)			
1684	PINCERS, cutting, joiner's, saddler's, shoemaker's, upholsterer's, and other Pincers	<i>The pair</i>	0 1 6	0 7 6
1685	PINKING IRONS, for scolloping linen, paper, &c., and for making artificial flowers	<i>Each</i>	0 1 6	0 15 0
1686	PIN TONGS, or Sliding Tongs, serving as small hand-vices	<i>Each</i>	0 2 6	0 4 6
1687	PLANES for joiners, cabinet-makers, &c., in great variety.			
	(A.— <i>Planes for Surfacing, or Bench Planes.</i>)			
1688	— Jack Planes from 12 to 17 inches long, with cast steel double irons	<i>Each</i>	0 4 6	0 5 0
1689	— Panel, trying, long and jointer planes, from 12 to 30 inches long, with cast steel double irons	<i>Each</i>	0 5 10	0 9 0
1690	— Smoothing Planes, with cast steel double irons, from 2 to 3 inches wide	<i>Each</i>	0 3 10	0 5 0
1691	— Smoothing planes of smaller sizes, of beech and box-wood, generally with single irons, for tool chests, modellers, &c.	<i>Each</i>	0 2 6	0 7 0

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No.	PLANES continued. (B.— <i>Planes for Rebates, Grooves, &c.</i>)		From £ s. d.	To £ s. d.
1692	Rebate planes from 1 to 2 inches wide, with square or skew irons	Each	0 2 6	0 3 6
1693	Standing Fillisters, or those not possessing the power of adjustment	Each		0 5 6
1694	Moving Fillisters, with adjusting slips and stops	—	0 6 9	0 10 6
1695	Sash Fillisters, of several constructions	—	0 17 0	0 19 0
1696	Grooving Planes	—	0 5 6	0 7 0
1697	Slit-deal Planes, for grooving and tonguing deal boards, for partitions and flooring	The pair		0 6 6
1698	Slit-deal Planes of improved kind, with 3 pairs of irons, for wood of different thicknesses	—		The pair 0 13 0
1699	Ploughs, with 6 and 8 irons, and of various constructions, used for grooving and rebating works, whether straight or circular	—	1 2 0	1 16 0
1700	Routing Plane, called also Old Woman's Tooth, used with the plough irons, for sinking recesses, inlaying, &c.	Each	0 1 9 0	2 3
1701	Rounders, or planes with two handles, for rounding wooden rods and poles, from $\frac{1}{2}$ to 2 inches diameter	Each	0 2 6 0	7 6
(C.— <i>Planes for Mouldings.</i>)				
1702	Astragal Planes, of various sizes	Each	0 3 0 0	4 6
1703	Bead Planes	—	0 3 2 0	5 0
1704	Hollows and rounds, from $\frac{1}{8}$ to 2 inches	—		0 4 8
1705	Hollows and rounds	The set of 18 pairs		4 4 0
1706	Ogee Planes, for the mouldings known as the Cyma recta, and Cyma reversa	—	0 2 6 0	7 6
1707	Sash Bar Planes	—	0 7 0 0	10 6
1708	Moulding Planes, various	—	0 5 6 0	10 6
<i>There are many additional Planes of each of the kinds A. B. C., several of which are employed for compass or curvilinear works, as by Coachmakers, Hand-rail makers, and others. Detailed lists of the whole may be had on application.</i>				
(D.— <i>Plane-irons, or Loose Cutters for Joiners' Planes.</i>)				
1709	Plane irons for single or double iron bench planes, made of cast steel, and from 1 to 3 inches wide	Each	0 0 6 0	2 6
1710	Plough irons of cast steel, in sets of 8	—		0 4 0
1711	Rebate irons assorted, below 2 inches	—	0 0 3 0	0 6
1712	Moulding plane irons, left soft, and not figured	—	0 0 3 0	0 6
(E.— <i>Iron Planes.</i>)				
1713	Mitre planes, smoothing planes, trying planes, and rebate planes for joiners, constructed principally in iron, with steel soles. Also Silcock and Lowe's patent planes of various kinds, made in malleable cast-iron; namely, the double fillister, the fluting or grooving plough, the dado grooving plane, the trying plane, and the moulding or bead plane (Described in the Mechanic's Magazine, 1844, p. 86) Each	0 10 0 3 5 0		
1714	Iron planes for smiths, machinists, mathematical instrument makers and others, for planing metals	—	2 2 0 3 3 0	
PLANING BENCHES of beech-wood, framed, together with screw-bolts; namely:—				
1715	PLANING BENCHES, with two side-screws and loose chap, for holding pieces by their sides or edges; one iron sliding bench-hook, and one wooden planing stop, and also a drawer for tools: 4 feet, £4; 5 feet, £5; 6 feet, £6.	—	4 0 0 6 0 0	

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No.		From £ s. d.	To £ s. d.
	PLANING BENCHES continued.		
1716	— PLANING BENCHES as above, with the addition of an end screw and two bench-hooks, for grasping by their ends pieces of wood not exceeding 2, 3, and 4 feet long respectively : 4 feet, £6 ; 5 feet, £7 10s. ; 6 feet, £9	6 0 0	9 0 0
1717	— PLANING BENCHES as above, with the further addition of a sliding case of 8 drawers, with partitions, all secured with one lock, and a sliding cover to the well, to adapt the bench to receive a full assortment of tools : 4 feet, £10 ; 5 feet, £12 ; 6 feet, £14	10 0 0	14 0 0
1718	— PLANING BENCH, 6 feet long, of the last or most complete description, with a full assortment of 186 various tools, for joiners' work, cabinet work, and general purposes. <i>(List of contents on application.)</i>		Complete 42 0 0
1719	— PLANING BENCH as above, in mahogany, and with more highly finished tools, handled in hard-wood		Complete 52 10 0
1720	PLANING ENGINES, OR MACHINES for planing metal ; made of different degrees of size and strength, and with a variety of apparatus for fixing the objects to be planed.		
1720	PLUMB BOBS of various kinds, some with shifting centers for the pocket	Each 0 2 0	0 6 0
1721	POCKET OR TRAVELLING TOOLS, made with tangs of uniform size to fit the socket handles, No. 1445; namely, brad-awls, broaches, drills, chisels, files, gimlets, gouges, hammers, rasps, saws, screw-drivers, &c. &c.	Each 0 1 0	0 3 6
1722	— Pocket travelling tools selected from the above, and from various other tools not requiring handles, arranged in leather pouches, in sets of from 12 to 48 tools	1 10 0	4 4 0
1723	— Pocket travelling tools as above, arranged in small mahogany cases	1 15 0	4 14 6
1724	— Pocket travelling pads, each having a brass socket, with side screw, and a handle of hard-wood, hollowed out to contain the tools	0 15 0	1 0 0
1725	POLISHING POWDERS of all the usual kinds, and polishing stones in squared pieces ; namely, blue and grey stones, water of Ayr or snake-stones, and others.		
1726	POLISHING CASES of mahogany, containing 5 canisters with polishing powders, 5 bottles with lackers, Dutch rush, brushes, linen, flannel, &c.		2 10 0
1727	PRESSES of various kinds ; namely, presses for Copying letters, presses for Embossing, Fly-presses, Printing, Rolling, and Seal-presses to order.		
1728	— Cowper's parlour printing presses. (See Appendix B. p. 69.)		
1729	PROPORTIONAL CALLIPERS AND COMPASSES. (See Drawing Instruments, Nos. 1268 to 1273.)	Each 0 10 0	4 14 6
	1730 PRUNING AND GARDENING TOOLS :—		
1731	— Averuncators, or a species of shears, mounted on poles six feet long, and used for cutting off small branches. The one part of the instrument is formed as a hook to contain the branch ; the moveable blade is kept distended by a spring, and is closed in the act of cutting by a strong catgut line running down the handle, which latter may be extended if required by an additional joint, as in a fishing-rod	1 10 0	2 0 0
1732	— Bill-hooks, of patterns used in different counties, and of various sizes, with handles of wood, buck-horn, &c.	0 5 0	0 12 0
1733	— KNIVES for budding, of many patterns, both in straight and clasped handles	0 2 6	0 7 0
1734	— Knives for grafting, with ivory stops to determine the depth of the incision	0 4 6	0 7 6

No.	From £ s. d.	To £ s. d.
PRUNING AND GARDENING TOOLS continued.		
1735 — Knives for pruning, with straight or curved blades, and in straight or clasped handles. The last have sometimes a pruning saw and knife combined - - - - - <i>Each</i>	0 2 6	0 7 6
1736 — Knives for pruning, of the pattern used in Madeira; and also Vine-dressers' knives - - - - - <i>Each</i>	0 3 6	0 6 6
1737 — Saws for pruning, 12 to 24 inches long, like the narrow or compass saws used by joiners - - - - - <i>Each</i>	0 4 6	0 7 6
1738 — Saws for pruning, 8 to 12 inches long, with double teeth, and with buck-horn handles - - - - - <i>Each</i>	0 7 6	0 10 6
1739 — Saws for pruning, mounted on long poles, the blades fixed at a slight inclination, and with the teeth inverted, so as to cut in the downward or pulling stroke - - - - - <i>Each</i>	0 7 0	0 9 0
1740 — Scissors of various patterns for trimming plants - <i>The pair</i>	0 2 0	0 7 6
1741 — Scissors for gathering flowers and grapes, the blades of which are made to cut as scissors, and also to hold as pliers - - - - - <i>The pair</i>	0 3 6	0 7 6
1742 — Scissors for gathering grapes and flowers, similar to the last, so as to cut and hold, but mounted on long sticks, and actuated by a catgut, after the manner of the averuncators; No. 1731 - - - - - <i>The pair</i>	0 10 6	0 15 0
1743 — SHEARS for pruning, made somewhat after the manner of ordinary scissors, but with one part very short and with a keen convex edge, the other part formed as a hook, to retain the branch from slipping away - - - - - <i>The pair</i>	0 6 0	0 10 6
1744 — Shears for pruning, similar to the above as to the cutting blade and hook, but formed with straight handles, united by a sliding joint, so as to act with a drawing cut, more resembling that of a knife, which action is less injurious to the plants - - - - - <i>The pair</i>	0 9 0	0 14 0
1745 — Shears; trimming shears for hedges, &c., made like large scissors or tailors' shears, and with wooden handles from one to three feet long - - - - - <i>The pair</i>	0 6 0	0 8 6
1746 — Shears for borders, with long bent handles, and with or without rollers to rest upon the ground - - - - - <i>The pair</i>	0 10 0	0 12 0
1747 — Spuds and weed-hooks of several forms, intended to be mounted upon long sticks - - - - - <i>Each</i>	0 5 0	0 9 6
1748 — Sets of pruning implements; consisting of a saw and various other tools, made to fit one handle with a socket and spring catch, and contained in leather pouches - - - - - <i>The set</i>	0 14 0	1 10 0
1749 — Sets of pruning implements, with screws to adapt them to an iron socket fixed at the end of a pole - - - - - <i>The set</i>	0 16 0	2 10 0
1750 — Pouches and cases fitted up to order, with selections of the pruning and garden tools specified, and any others made to order - - - - - <i>Each</i>	1 10 0	4 0 0
1751 PUNCHES for brads and nails - - - - - <i>Each</i>	0 0 2	0 0 4
1752 — Punches for tinmen, coppersmiths, &c. - - - - - <i>Each</i>	0 5 0	0 10 0
1753 — Punches for paper, cloth, gun-wadding, &c. - - - - - <i>Each</i>	0 0 6	0 6 0
1754 — Punches for similar materials of larger diameters, made with steel rings and iron centers to order.		
1755 — Punches for chasers, music engravers, type founders, &c.		
1756 QUARM'S bevilling instrument for joiners. (See No. 1028.)		
1757 RAOUIL'S French files, from 3 to 7 inches long, the teeth of which are cut by machinery. (See No. 1364.) - <i>Each</i>	0 1 0	0 3 2
1758 RAZORS and razor-strops. (See Cutlery, Nos. 1176 to 1185.)		
1759 RINGS FOR KEYS. The rings are embossed to order with names and addresses - - - - - <i>Each</i>	0 0 4	0 3 0
1760 ROBISON'S (the late Sir John) workshop or howitzer blow-pipe. (See No. 1037.) - - - - - <i>Each</i>	2 0 0	4 0 0
1761 — Robison's geological hammers. (See No. 1397.) - <i>Each</i>	0 4 6	0 7 6
1762 — Robison's curvilinear files. These files are cut whilst flat,		

No.		£ s. d.
	ROBISON'S CURVILINEAR FILES <i>continued.</i>	
	and are afterwards bent or channelled, so as to present one convex and one concave side. (Rewarded by the Society of Arts, 1843. See No. 1365.)	
1763	RONALD'S (F., Esq.) apparatus for curvilinear turning. (See Lathe Apparatus, No. 1600.)	
1764	ROSE ENGINES, constructed on that principle in which the mandrel, during its revolution, rocks sideways, under the guidance of rosettes, or figured plates, fixed on the mandrel.	
	The mandrel frame is mounted on a joint, and is pressed sideways by a spring, until the rosette comes in contact with a rubber, or fixed point, which causes the mandrel frame to recede at every projection of the rosette; the <i>fixed</i> tool then traces on the work an undulating line, having the same character as that of the particular rosette employed. At other times the mandrel frame is temporarily fixed, and the rosette causes the mandrel to reciprocate endways, through its collars, which action is sometimes called the pumping motion.	
1765 —	Rose ENGINE, with cast-iron mandrel frame, twelve inches high from the fixed centers to the mandrel; with two levers to fix the mandrel frame at the time of chucking and plain turning; and two spiral springs contained in brass boxes, for giving the rocking and pumping motions.	
	The mandrel works in gun-metal collars, has a wooden pulley, and a barrel with eighteen rosettes, having patterns of different numbers and forms, and three extra rosettes in halves. The mandrel has also a dividing plate and detent, that are used in working patterns, for shifting the rosettes the half, third, or fourth parts of their respective figures.	
	Two rectangular bars of steel are fixed parallel with the mandrel on cast-iron brackets, and are fitted with carriages that grasp the fixed rubbers against which the rollers act. Four steel rubbers for the rosettes.	
	A right angled slide rest, and three dozen tools for the same.	
	The above mounted on a strong frame of beech-wood, secured by screw bolts, an iron fly wheel with elevating apparatus and treadle for the same, also a hand-motion to connect the fly wheel and mandrel	150 0 0
1766 —	Rose ENGINE as above, with the following extra apparatus; namely, three additional rosettes in halves, division plate with endless screw, and an oblique movement to the mandrel. Also an eccentric chuck, and an oval chuck	200 0 0
1767 —	Rose ENGINE, with cast-iron mandrel frame, twelve inches high from the fixed centers to the mandrel; with two brass levers steeled in front to fix the mandrel frame at the time of chucking and plain turning; and three spiral springs contained in brass boxes, for giving the rocking and pumping motions. The springs have tangent screw adjustments to regulate their tension.	
	The mandrel is hardened, bored throughout, and works in hardened steel collars fitted on a sliding socket; six steel screw guides, and the appropriate apparatus for cutting screws. The mandrel has two barrels, together containing eighteen rosettes, having patterns of different numbers and forms, and six extra rosettes in halves. The one barrel has a dividing plate and detent, that are used for shifting the rosettes the half, third, or fourth parts of their respective figures. The other barrel has a tangent screw adjustment, for finer subdivisions, and to enable the two barrels to be used conjointly in making compound figures.	
	Two triangular bars of steel are fixed parallel with the mandrel, on brass brackets, and are fitted with carriages that grasp the fixed rubbers against which the rosettes act. Four ivory rubbers	

No.			£	s.	d.
	ROSE ENGINES continued.				
	for the rosettes, four steel rubbers, and four steel rubbers with steel rollers.				
	A compound sliding rest to fix parallel with, and at right angles to the mandrel, and also at other angles; six dozen tools for the same contained in a mahogany case; and six steel rubbers fitted to the front of the tool slide, to regulate the penetration of the tool in irregular works of metal.				
	Oval chuck, eccentric chuck, and oblique motion.				
	The above mounted on a strong frame of mahogany, having a case with drawers secured with one lock, iron fly wheel, elevating apparatus, and treadle for the same; also a hand motion, with sliding spindle and elevating apparatus; the whole finished in a very handsome manner - - - - -				330 0 0
1768	ROSE ENGINE APPARATUS, any of which may be added to the above.				
1769	— Cylinder popit head with centers and flange, and common rest with tee; to be used when the mandrel is simply employed as that of a common lathe, for chucking and surfacing the works to be rose engine-turned.				
1770	— Triangular bar fixed to the mandrel frame with three separate apparatus; namely, a cylinder popit head, a spring popit head, and a sliding guide, to be severally used with the oscillating movement of the rose engine, in ornamenting long and slender works.				
1771	— T formed rubbers of different curvatures for working interrupted figures, and shallow figures from deep rosettes; also a shifting rubber carriage to enable these rubbers to be fixed to the side bars.				
1772	— Micrometer rubber for working compounded and vanishing figures.				
1773	— Rosettes in halves for small diameters.				
1774	— Rosettes in halves for polygonal figures.				
1775	— Rosettes in halves for compound figures, or those with primary and secondary curves, &c.				
1776	— A division plate in halves, and sliding index.				
1777	— Segment engine and stop.				
1778	— Chucks of the usual kinds for fixing works.				
1779	— Chucks of several kinds for ornamenting work; namely, the Compound oval and eccentric chuck; Ibbetson's Geometric chuck, Straight-line chuck, Pillar-fluting chuck, Spherical chuck, &c.				
1780	— Revolving cutters for the slide rest, and nearly all the apparatus that are added to lathes of the most complete kind.				
1781	ROUTLEDGE'S engineer's rule. (See Slide Rules, No. 1792.) 7s. 6d. to		0	9	0
1782	RULES OF NUMEROUS KINDS—				
1783	— Box-wood rules, 1 foot long, with common or arched joints, folding into 3 inches - - - - -	From	£	s.	d.
		Each	0	1	6
1784	— Box-wood rules, 2 feet long, with 1 joint, as above, folding into 12 inches - - - - -	Each	0	1	9
1785	— Box-wood rules, 2 feet long, from $\frac{1}{2}$ to 1 inch wide, folding into 6 inches - - - - -	Each	0	2	6
1786	— Box-wood rules, 3 and 4 feet long, folding into 6, 9, and 12 inches - - - - -	Each	0	3	0
1787	— Ivory rules, 1 to 4 feet long, with common or arch joints of brass, or electrum, folding into 3, 4, 6, and 9 inches Each	0	5	6	2 10 0
1788	— Ivory rules as above, with silver arch joints - - - - -	Each	0	10	0
1789	— Whalebone rules, 2 and 3 feet long, folding into 3 inches, suitable to measuring curved as well as straight objects, fitted in cases for the waistcoat-pocket. French pattern. Each	0	4	0	6 6
1790	— Stationer's rules, 1 to 4 feet long, of box-wood, with brass edges - - - - -	Each	0	4	0
1791	— Sliding rules for glaziers, hatters, shoemakers, and others, divided into inches and other equal parts - - - - -	Each	0	2	6

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No.	RULES OF NUMEROUS KINDS <i>continued.</i>	From £ s. d.	To £ s. d.
1792	Sliding rules generally 2 feet long, and with boxwood, brass, and ivory slides, divided into inches and parts ; divided also logarithmically, and stamped with various tables ; namely, the Soho, Routledge's and Hawthorn's slide rules for engineers ; and other slide rules for the several purposes of auctioneers, carpenters, ironmongers, surveyors, timber measurers, &c. - - - - -	Each 0 4 6	0 10 6
1793	Rules and scales of various kinds for drawing. (See Drawing Instruments, Nos. 1291 to 1301.)		
1794	SAWS in great variety.		
	(A.—Taper Saws mostly without Frames.)		
1795	Cross cut and felling saws, 4 to 8 feet long - - - - -	Each 1 0 0	2 5 0
1796	Long, pit, or whip saws ; also frame and felloe saws, 4 to 8 feet long - - - - -	Each 1 0 0	2 5 0
1797	Tillers, boxes, and frames to the above saws, various.		
1798	Rip, half-rip, and hand saws, 22 to 30 inch, with beech handles - - - - -	Each 0 6 0	0 7 6
1799	Fine hand saws, panel, and fine panel saws, 20 to 26 inch, similar to the above, but with finer teeth - - - - -	Each 0 5 6	0 6 3
1800	Chest saws for small tool chests, 8 to 20 inch, with handles of beech, boxwood, ebony, and rose-wood - - - - -	Each 0 4 6	0 7 6
1801	Table saws, and compass or lock saws, 8 to 26 inch, with narrow taper blades, and beech handles - - - - -	Each 0 1 6	0 3 6
1802	Keyhole, or fret saws, 6 to 12 inch, without handles Each 0 0 6	0 1 0	
1803	Keyhole saw pads, or handles for the last, of box-wood and rose-wood, with brass sockets and side screws - Each 0 2 0	0 0 3	6
	(B.—Parallel Saws with Backs.)		
1804	Tenon and sash saws, 14 to 20 inch, with iron or brass backs, and beech handles - - - - -	Each 0 5 6	0 13 0
1805	Carcase and dovetail saws, 6 to 12 inch, with iron or brass backs, and beech, box, or rose-wood handles - - - - -	Each 0 6 0	0 10 0
1806	Smith's screw head saws, 3 to 8 inch, with narrow blades, iron or brass backs, and straight wooden handles Each 0 2 6	0 5 0	
	(C.—Various Parallel Saws used in Frames.)		
1807	Mill saw blades, of various widths, thicknesses, and lengths, to order - - - - -		
1808	Frame saws, 18 to 30 inch, with wide blades and wood frames, for joiners, wood-cutters, chair-makers, and others Each 0 8 0	0 12 0	
1809	Frame saw blades for the above - - - - -	0 4 6	0 7 0
1810	Turning or sweep saws, 6 to 24 inch, with narrow blades and wood frames - - - - -	Each 0 4 6	0 12 0
1811	Turning saw blades for the above - - - - -	0 0 6	0 2 0
1812	Ivory saws, 15 to 30 inch, with thin wide blades and iron or steel frames, with or without tightening nuts - - Each 1 0 0	1 10 0	
1813	Ivory saw blades for the above - - - - -	0 6 0	0 8 0
1814	Smith's frame saws for metal, 3 to 14 inch, with iron or steel frames and tightening nuts - - - - -	Each 0 2 6	0 6 6
1815	Smith's frame saw blades for the above - - - - -	0 0 3	0 1 2
1816	Piercing and buhl saw frames, of steel and wood - Each 0 4 6	1 0 0	
1817	Piercing and buhl saw blades for the above - The dozen 0 1 6	0 2 6	
1818	Circular saws of various diameters ; namely—		
	3 4 5 6 7 8 10 12-inch diam.		
	3s.6d. 4s.6d. 5s.6d. 6s.6d. 7s.6d. 9s. 13s. 16s. Each 0 3 6	0 10 0	
	14 16 18 20 24 28 32 36-inch diam.		
	20s. 24s. 30s. 36s. 48s. 66s. 88s. 120s. Each 1 0 0	6 0 0	

No.		From £ s. d.	To £ s. d.
1819	SAW MACHINES of various kinds, and others to order. (A.— <i>Reciprocating Saw Machines.</i>)		
1820	CROSS CUTTING SAW MACHINE, for firewood, made after the pattern of the machines used in France, America, &c. -	8 0 0	14 0 0
1821	VERTICAL SAWING MACHINE, for blades from 12 to 20 inches long, mounted on benches, with treadle, elevating spring, and various guides, for sawing parallel, bevelled, and circular pieces - - - - -	14 0 0	20 0 0
1822	LUND'S VERTICAL SAWING MACHINE, with shorter and narrower blades, mounted on a frame, with foot-wheel, treadle, and guide pulley, &c. Intended for smaller works than the last, and especially for arbitrary curves, such as are met with in fret-work, inlaying, &c. - - - - -	8 0 0	14 0 0
1823	WILLIS'S VERTICAL SAWING MACHINE, for purposes similar to the last, and also driven by the foot-wheel. This machine requires to be mounted on the frame of a foot-lathe, grinding machine, or circular saw machine - - - - -	5 0 0	8 0 0
	(B.— <i>Circular Sawing Machines.</i>)		
1824	Spindles, 12 to 24 inches long, for circular saws below one foot diameter, to work between steel centers; each spindle has a flange, socket, and nut - - - - -	1 0 0	1 16 0
1825	SAW SPINDLE, 12 inches long, as above, with 3 saws, from 4 to 8 inches diameter; mahogany platform for the same, with guide for sawing parallel pieces; mounted on a mahogany box or frame, to fit the bearers of ordinary foot-lathes - - - - -	4 0 0	5 0 0
1826	SAW MACHINE, with a spindle and 6 saws, from 4 to 8 inches diameter; iron platform planed true on the face, with guide to prevent the deviation of the saw, guide for parallel pieces, and guide or protractor for angular pieces. The platform is hinged to an iron casting, that receives also the center screws for the spindle, and an elevating screw to determine the projection of the saw, as in cutting rebates. This machine may be mounted on any convenient bench, and driven by any accessible power - - - - -	14 0 0	
1827	SAW MACHINE, No. 1826; mounted on a frame of beech-wood, with plain wheel, neither japanned nor polished - - - - -	18 0 0	
1828	SAW MACHINE, No. 1826; mounted on a frame of mahogany, with bevel-wheel, japanned and polished - - - - -	20 0 0	
1829	GUIDES TO THE ABOVE machines for sawing mosaic works in wood; and guides for sawing prisms, pyramids, and various pieces requiring two obliquities, such as models of the geometrical and crystallographical solids - - - - -	3 0 0	6 0 0
1830	SAW MACHINES resembling No. 1826, but on a larger and stronger scale, for saws from 6 to 12 inches diameter - - - - -	10 0 0	25 0 0
1831	SAW MACHINES of common construction, for sawing fire-wood; supplied with or without the wooden frames, or benches, or the fly-wheels by which they are driven - - - - -	0 2 0	3 6
1832	SPINDLES FOR LARGE Saws, running in collars or bearings of gun-metal or steel, with fast and loose pulleys, flanges, nuts, &c.; and also large sawing machines of different kinds made to order - - - - -	0 1 0	2 6
1833	SAW PADS for keyhole saws, with brass or electrum sockets, and two side screws; handled in box-wood, ebony, or rose-wood - - - - -	Each	
1834	SAW SETS, for setting or bending the teeth of saws; made of different patterns, also with and without handles - - - - -	Each	

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.		From £ s. d.	To £ s. d.
1835	SCALES OF EQUAL PARTS, ruled on card-board. (See Appendix C. page 70.) 1s. 0d. each, 9s. 0d. the dozen.		
1836	SCISSORS. (See Cutlery, Nos. 1186 to 1203.) - - The pair	0 1 0	2 2 0
1837	SCRAPERS for joiners, with and without handles - - Each	0 0 4	0 1 2
1838	Triangular scrapers, for engravers and others - - -	0 2 0	0 3 0
1839	SCRATCH BRUSHES, for cleaning files, &c.; made of brass or steel wire - - - - - Each	0 2 6	0 4 6
1840	Scratch brushes, made of strips of the material prepared for carding or combing cotton-wool, fixed on wooden handles - - -	0 2 0	0 3 0
1841	SCREW CUTTING APPARATUS of various kinds. (A.— <i>Screw Boxes for Cutting Wood Screws.</i>)		
1842	Screw boxes of hard wood, $\frac{1}{2}$ to $\frac{3}{4}$ inch, London made Each	0 4 6	0 6 6
1843	Screw boxes of beech-wood, from $\frac{3}{4}$ to $2\frac{1}{2}$ inch, with handles - - -	0 5 0	1 10 0
	(B.— <i>Screw Plates and Screw Stocks for Metal Screws.</i>)		
1844	Screw plates and taps of Lancashire make, and of various sizes, for watch-makers, and general artizans - Each	0 2 6	1 0 0
1845	Screw plates, of large size with two handles, intended for common works - - - - - Each	1 0 0	2 0 0
1846	Screw stocks, fitted up after the manner of pliers, to be used with the lathe - - - - - Each	1 0 0	2 0 0
1847	Screw stocks of H. and Co.'s manufacture, 6 inches long, and case hardened; with 4 pair of dies, fitting in double chamfers, 12 taps, 2 tap wrenches, all contained in a mahogany case - - - - - Complete		4 0 0
1848	Nine-inch diestock as above - - - - -		5 0 0
1849	Twelve-inch - - - - -		6 0 0
1850	Sixteen-inch - - - - -		8 0 0
1851	Twenty-inch - - - - -		10 0 0
1852	Twenty-four inch - - - - -		12 0 0
1853	Screw stocks of Birmingham, Lancashire, French, Geneva, and other manufacture - - - - -	1 0 0	6 0 0
1854	Taps and dies, &c., of all diameters, and of any number of threads to the inch, made to order.		
1855	Screw tools for the lathe; the set of 12 pairs, shallow or deep, of H. and Co.'s ordinary threads - - - The set		1 10 0
1856	Screw tools as above, (See Nos. 2013 and 2014.) The pair	0 1 10	0 3 9
1857	SCREW CLAMPS for joiners and others. (See Cramps, Nos. 1144 to 1146.) - - - - - Each	0 5 6	2 10 0
1858	SCREW DRIVERS in beech handles, for joiners - - - Each	0 1 0	0 4 0
1859	Screw drivers in hard wood handles, neatly finished - - -	0 1 6	0 6 0
1860	SCREW WRENCHES or coach wrenches, of common kind - - -	0 3 6	0 6 0
1861	Screw wrenches of Lancashire and Birmingham make - - -	0 7 6	1 2 0
1862	Screw wrenches of H. and Co.'s pattern, some of which are adapted to countersunk screws of different kinds - Each	1 4 0	1 12 0
1863	SCRIBING TOOLS for timber merchants, joiners, and others, with or without tape measures attached to them - Each	0 3 6	0 10 6
1864	SEAL ENGRAVERS' ENGINES, and moulds for casting the quills, or the shanks of the engraving tools.		
1865	SEGMENT ENGINES for turning lathes. (See No. 1643.)		
1866	SEWING PRESSES for bookbinders. (See No. 1038.)		
1867	SHEARS. Hand shears, from 3 to 8 inch - - - - - The pair	0 1 9	0 4 6
1868	Bench shears, from 12 to 24 inch - - - - -	0 7 6	0 18 0
1869	Garden shears and scissors, in great variety. (See Nos. 1740 to 1746.) - - - - -	0 3 6	0 15 0
1870	SHANK'S drilling tools. (See Nos. 1329 and 1330.) - Each	2 10 0	0 8 10 0
1871	SHOOTING BOARDS, and mitre blocks for joiners - Each	0 6 0	0 15 0

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.		From £ s. d.	To £ s. d.
1872	SKATES of numerous kinds, patent and others, including the Oxford, Cambridge, and the Skating Club patterns <i>The pair</i>	0 7 6	1 10 0
1873	SLIDING CENTERS, made in steel, with inverted cones from $\frac{1}{2}$ to 1 inch diameter ; used for marking the centers of round pieces of metal or wood, before drilling the center holes, by which the pieces are fixed in the lathe, for the purpose of being turned - - - - -	Each 0 6 0	0 10 0
1874	— Sliding centers, with brass cones from 1 to 3 inches diameter - - - - -	Each 0 8 0	1 0 0
1875	SLIDING RESTS of various kinds, principally intended for wood, and ornamental turning ; together with tools and revolving cutters for the same. (See Detached parts of Lathes, Nos. 1605 to 1616.)		
1876	SLIDING RESTS, principally intended for metal turning ; together with tools and revolving cutters for the same. (See Nos. 1617 to 1628.)		
1877	SLIDING TONGS, 4 to 6 inch, with straight or cross chaps, used after the manner of pin and hand vices - - - - -	Each 0 2 6 0	4 6
1878	SOCKET HANDLES, with brass sockets, having each a rectangular mortise and side screw, for awls, chisels, files, saws, turning tools and numerous other instruments, which are made with tangs of corresponding size, for the sake of portability - - - - -	Each 0 4 6 0	5 6
1879	— Socket handles, with spring sockets, clip rings, and side screws, for files, with tangs of the customary forms	Each 0 3 6 0	7 0
1880	— Socket handles, with spring sockets of brass, and side screws as above, for sliding rest tools and others	Each 0 7 0 0	8 0
1881	SOLDERING APPARATUS. (See No. 1376.) - - - - -	Set 2 10 0	2 15 0
1882	SPINDLES for circular saws, and various machinery for the same. (See Sawing Machines, Nos. 1824 to 1832.)		
1883	SPIRIT LEVELS, 6 to 14 inch, mounted in wood - - - - -	Each 0 3 0 0	7 0
1884	— Spirit levels, 6 to 14 inch, in wood, plated with brass - - - - -	0 4 0 0	12 6
1885	— Spirit levels, 5 to 12 inch, accurately made in brass, with adjusting screws ; the frames either plain or boxed	Each 0 12 0 2	2 0
1886	SPRING DIVIDERS or spring compasses, 3 to 8 inch - - - - -	0 2 0 0	3 6
1887	— Spring dividers as above, 3 to 8 inch, bright - - - - -	0 2 6 0	5 6
1888	— with club points or cones. (See No. 1135.)	0 2 6 0	6 6
1889	SPOKESHAVES of various kinds ; namely :—		
1890	— Spokeshaves, common, of beech-wood, $2\frac{1}{2}$ to 6 inch -	Each 0 1 2 0	2 0
1891	— plated with brass	0 1 6 0	3 0
1892	— plated with ivory	0 1 10 0	3 6
1893	— with screws to the irons	0 2 8 0	4 6
1894	— with double-edged irons	0 3 0 0	5 0
1895	— of box-wood and hard wood, various	0 1 8 0	6 0
1896	— irons various, separately	0 0 5 0	1 0
1897	SQUARES of many kinds, namely :—		

(A.—*Squares for Joiners.*)

1898	Joiner's squares, 3 to 18 inches, with steel blades, and hard wood stocks - - - - -	Each 0 1 6 0	6 0
1899	Joiner's squares, 3 to 18 inches, plated with brass - - - - -	0 1 9 0	9 0
1900	Joiner's squares, 6 to 12 inches, with spirit levels - - - - -	0 4 0 0	8 0
1901	Mitre squares, 8 to 12 inches, various - - - - -	0 2 6 0	6 6

(B.—*Squares for Turners and General Mechanists.*)

1902	Common smith's squares, 18 to 24 inches, cut out of sheet iron, and stamped with inches - - - - -	Each 0 1 6 0	2 6
1903	Best squares, 1 to 6 inches, made of hardened steel, and very accurately finished - - - - -	Each 0 2 6 0	7 0

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No.		From £ s. d.	To £ s. d.
SQUARES continued.			
1904	Back squares, 1 to 6 inches, similar to the last, but with thin steel backs riveted on - - - - -	Each 0 4 0	0 10 6
1905	Back squares, 1 to 6 inches, with steel blades, and thick backs of brass or steel riveted on - - - - -	Each 0 4 0	0 10 6
1906	Triangular steel squares, 1½ to 6 inches - - - - -	0 2 6	0 7 0
1907	Turner's squares, with sliding blades, 4 to 9 inches - - - - -	0 8 0	0 16 0
1908	Set squares for the slide rest - - - - -		0 10 0
1909	Squares with steel backs riveted on, and serving also for the angles of 30, 45, and 60 degrees. French pattern - - - - -	0 16 0	1 0 0
1910	Squares of various kinds for mechanical drawing. (See Drawing Instruments, Nos. 1302 to 1305.) - - - - -	Each 0 5 6	2 10 0
<i>Larger squares of all these and other kinds made to order.</i>			
1911	STAKES for clock and watchmakers, coppersmiths, tinmen, and others, intended to be fixed in the vice, in the bench, or in wooden blocks - - - - -	Each 0 2 6	2 10 0
1912	STAMPS for cutting out artificial flowers, and paper labels, made to order of any required patterns - - - - -	Each 0 1 6	0 12 0
1913	Stamps for marking books, paper, wood, ivory, metal, &c., with cyphers, crests, coats of arms, or other devices.		
1914	Stamps with single letters or figures, for wood, ivory, and metal, in sets of 36, not exceeding ¼ inch high, including the complete alphabet and figures - - - - -	The set 1 0 0	1 12 0
1915	Stamps with single figures, in sets of 9, as above - - - - -	0 5 0	0 9 0
1916	Stamps with single letters and figures, from ¼ to 1 inch high.		
1917	Stamps with initials or names, and addresses to order.		
1918	Stamps for type founders, and engravers of music, to order.		
1919	STANDS of cast-iron, of a tripod form, for tail vices, presses, &c.		
1920	STEELS for sharpening knives, plain or fluted, and variously handled. (See Cutlery, No. 1225.) - - - - -	Each 0 2 6	0 6 0
1921	STOCKS with any number of bits, for joiners, piano-forte makers, smiths, and others. (See Nos. 1050 to 1056.)	Each 0 16 0	2 10 0
1922	STOCKS with dies and taps. (See Screw Apparatus, Nos. 1844 to 1854.) - - - - -	The set 1 0 0	12 0 0
1923	STONES, Turkey oilstones, with or without cases - - - - -	Each 0 5 0	1 5 0
1924	Slips for gouges - - - - -	Each 0 1 0	0 2 6
1925	Charnley Forest, Water of Ayr, Welch and rub stones, and other stones for sharpening tools, and for polishing metals, &c. - - - - -	Each 0 0 2	0 3 0
1926	STRAIGHT EDGES of steel, from 6 inches to 60 inches long, and accurately finished - - - - -	Each 0 8 0	5 0 0
1927	Radial Straight edges, for ruling lines converging to a center: required for dividing - - - - -	Each 0 6 6	0 10 6
1928	STROPS FOR RAZORS. (See Cutlery, No. 1184 and 1185.)	0 2 6	0 15 0
1929	STRIKING KNIVES for joiners and cabinet makers - - - - -	Each 0 0 6	0 1 0
1930	TAPE MEASURES of several kinds, namely, ordinary tape measures with rollers and turn-over handles; Chesterman and Bottinu's patent wire tapes; Chesterman's patent spring tapes, &c. (See Measuring Tapes, Nos. 1650 to 1653.) - - - - -	Each 0 4 0	1 10 0
1931	TAPS AND DIES. (See Screw Apparatus, Nos. 1844 to 1854.)		
1932	Taps and screws made of every diameter, length, and thread, to order.		
1933	TIMBER SCRIBERS, plain in common wood handles; also fitted as pocket-knives, with various blades; and likewise with tape measures - - - - -	Each 0 1 6	0 15 0
1934	TOOLS FOR BLASTING roots of trees, contained in cases. (See No. 1032.) - - - - -	The set 2 12 6	
1935	TOOLS, ENGINES, AND MACHINES, for Boring, Drilling, Grinding, Sawing, Screw cutting, Shaping, Planing, Turning, Wheel cutting, &c. See Boring, Drilling, &c.		

No.
1936 TOOL CHESTS IN VERY GREAT VARIETY, arranged in four
principal groups.

The Tool Chests manufactured by H. and Co., present a very wide range as to size, completeness, and expense; namely, from No. 1937, the Ten-inch Tool Chest, of deal, price 15s., intended for young gentlemen, to No. 1976, the Thirty-six-inch Joiners' Tool Chest, price 27l. 10s., intended for amateurs, or practical men.

The tools are of sizes proportioned to the Chests, and are, in every case, selected with great care from those made for artizans.

Any of the contents are omitted or exchanged, to suit the wishes of purchasers, and the prices of the Tool Chests are modified accordingly.

(A.)—TOOL CHESTS FROM 10 TO 24 INCHES LONG, FOR THE USE OF
AMATEURS.

TEN-INCH TOOL CHEST.

1937 —— Ten-inch Tool Chest, of deal, with one Tray, containing the following Tools; namely:—

2 Brad-awls	2 Gimlets	1 Rasp
1 Brad-punch	1 Hammer	1 Saw
1 Chisel	1 Mallet	1 Screw-driver
1 File	1 Pair of pincers	Screws, nails, &c.
The Chest of Deal, the Tools handled in Beech-wood		- - - - 0 15 0

TEN-INCH TOOL CHEST.

1938 —— Ten-inch Tool Chest, of Deal, with one Tray, containing the following Tools; namely:—

3 Brad-awls	3 Gimlets	1 Pair of pincers
1 Brad-punch	1 Hammer	1 Rasp
1 Cutting-punch	1 Mallet	1 Saw
1 Chisel	1 Oilstone	1 Screw-driver
2 Files	1 Pair of compasses	Screws, nails, &c.
The Chest of Deal, the Tools handled in Beech-wood		- - - - 1 0 0

TEN-INCH TOOL CHESTS.

1939 —— Ten-inch Tool Chest, of Birch-wood, with one Tray, containing the following Tools; namely:—

3 Brad-awls	3 Gimlets	1 Pair of compasses
1 Brad-punch	1 Gouge	1 Pair of pincers
1 Cutting-punch	1 Hammer	1 Saw
1 Chisel	1 Mallet	1 Screw-driver
3 Files	1 Oilstone	Screws, nails, &c.

The Chest of Birch-wood, the Tools handled in Beech-wood - - - - 1 5 0
1940 —— The Chest of Mahogany, the Tools handled in Hard wood - - - - 1 10 0

TWELVE-INCH TOOL CHESTS.

1941 —— Twelve-inch Tool Chest, of Birch-wood, with one Tray, containing the following Tools; namely:—

4 Brad-awls	3 Files	1 Pair of compasses
2 Brad-punches	4 Gimlets	1 Pair of pincers
1 Cutting-punch	1 Gouge	1 Pair of flat pliers
2 Chisels; namely,	1 Hammer	1 Saw
1 Firmer chisel	1 Mallet	2 Screw-drivers
1 Chisel for metal	1 Oilstone	Screws, nails, &c.

The Chest of Birch-wood, the Tools handled in Beech-wood - - - - 1 10 0
1942 —— The Chest of Mahogany, the Tools handled in Hard wood - - - - 2 0 0

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No.			£ s. d.
FOURTEEN-INCH TOOL CHESTS.			
1943	— Fourteen-inch Tool Chest, of Birch-wood, with two Trays, containing the following Tools ; namely :—		
	4 Brad-awls	4 Gimlets	1 Pair of flat pliers
	2 Brad-punches	1 Gouge	1 Plane
	1 Cutting-punch	1 Hammer	2 Rasps
	3 Chisels ; namely,	1 Hatchet	2 Saws ; namely,
	2 Firmer chisels	1 Mallet	1 Hand saw
	1 Chisel for metal	1 Oilstone	1 Compass saw
	1 Crow-iron	1 Pair of compasses	2 Screw-drivers
	2 Files	1 Pair of pincers	Screws, nails, &c.
	The Chest of Birch-wood, the Tools handled in Beech-wood		2 2 0
1944	— The Chest of Mahogany, the Tools handled in Hard-wood		2 10 0
FOURTEEN-INCH TOOL CHESTS, WITH DRAWER.			
1945	— Fourteen-inch Tool Chest, of Birch-wood, with one Drawer and two Trays, containing the following Tools ; namely :—		
	4 Brad-awls	1 Hammer	3 Rasps
	2 Brad-punches	1 Hand-vice	1 Rule
	1 Cutting-punch	1 Hatchet	3 Saws ; namely,
	4 Chisels ; namely,	1 Mallet	1 Hand saw
	3 Firmer chisels	1 Oilstone	1 Compass saw
	1 Chisel for metal	1 Pair of compasses	1 Saw for metal
	1 Crow-iron	1 Pair of pincers	2 Screw-drivers
	3 Files	1 Pair of cutting pliers	1 Spokeshave
	4 Gimlets	1 Pair of shears	1 Square
	2 Gouges	1 Plane	Screws, nails, &c.
	The Chest of Birch-wood, the Tools handled in Beech-wood		3 3 0
1946	— The Chest of Mahogany, the Tools handled in Hard-wood		3 13 0
SIXTEEN-INCH TOOL CHESTS.			
1947	— Sixteen-inch Tool Chest, of Birch-wood, with two Trays, containing the following Tools ; namely :—		
	4 Brad-awls	1 Hammer	3 Rasps
	2 Brad-punches	1 Hand-vice	1 Rule
	1 Cutting-punch	1 Hatchet	3 Saws ; namely,
	4 Chisels ; namely,	1 Mallet	1 Hand saw
	3 Firmer chisels	1 Marking point	1 Compass saw
	1 Chisel for metal	1 Oilstone	1 Saw for metal
	1 Crow-iron	1 Pair of compasses	3 Screw-drivers
	3 Files	1 Pair of pincers	1 Spokeshave
	4 Gimlets	1 Pair of flat pliers	1 Square
	2 Gouges	1 Plane	Screws, nails, &c.
	The Chest of Birch-wood, the Tools handled in Beech-wood		3 3 0
1948	— The Chest of Mahogany, the Tools handled in Hard-wood		3 13 0
SIXTEEN-INCH TOOL CHESTS, WITH DRAWER.			
1949	— Sixteen-inch Tool Chest, of Birch-wood, with one Drawer and three Trays, containing the following Tools ; namely :—		
	6 Brad-awls	1 Hand-vice	1 Smoothing plane
	3 Brad-punches	1 Hatchet	3 Rasps
	2 Cutting-punches	1 Mallet	1 Rule
	1 Chalk-line & reel	1 Marking point	3 Saws ; namely,
	4 Chisels ; namely,	1 Oilstone	1 Hand saw
	3 Firmer chisels	1 Pair of compasses	1 Compass saw
	1 Chisel for metal	1 Pair of pincers	1 Iron-back saw
	1 Crow-iron	1 Pair of cutting pliers	1 Scraper
	4 Files	1 Pair of flat pliers	3 Screw-drivers
	6 Gimlets	1 Pair of shears	1 Spokeshave
	3 Gouges	2 Planes ; namely,	1 Square
	2 Hammers	1 Jack plane	Screws, nails, &c.
	The Chest of Birch-wood, the Tools handled in Beech-wood		4 4 0
1950	— The Chest of Mahogany, the Tools handled in Hard-wood		5 5 0

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.			£	s.	d.
EIGHTEEN-INCH TOOL CHESTS.					
1951 —	Eighteen-inch Tool Chest, of Beech-wood, with one Drawer and three Trays, containing the following Tools ; namely :—				
6 Brad-awls	1 Hatchet	1 Smoothing plane			
3 Brad-punches	1 Mallet	4 Rasps			
2 Cutting-punches	1 Marking point	1 Rule			
1 Chalk-line & reel	1 Oil-can	4 Saws ; namely,			
5 Chisels ; namely,	1 Oilstone	1 Hand saw			
4 Firmer chisels	1 Pair of compasses	1 Compass saw			
1 Chisel for metal	1 Pair of pincers	1 Iron-back saw			
1 Crow-iron	1 Pair of cutting pliers	1 Saw for metal			
4 Files	1 Pair of flat pliers	1 Scraper			
6 Gimlets	1 Pair of round pliers	3 Screw-drivers			
3 Gouges	1 Pair of shears	1 Spokeshave			
2 Hammers	2 Planes ; namely,	1 Square			
1 Hand-vice	1 Jack plane	Screws, nails, &c.			
The Chest of Birch-wood, the Tools handled in Beech-wood	- - -		5	5	0
1952 —	The Chest of Mahogany, the Tools handled in Hard-wood	- - -	6	6	0
TWENTY-INCH TOOL CHESTS.					
1953 —	Twenty-inch Tool Chest, of Birch-wood, with one Drawer and three Trays, containing the following Tools ; namely :—				
8 Brad-awls	1 Mallet	1 Smoothing plane			
4 Brad-punches	1 Marking point	4 Rasps			
2 Cutting-punches	1 Oil-can	1 Rule			
5 Chisels ; namely,	1 Oilstone in case	5 Saws ; namely,			
4 Firmer chisels	1 Oilstone slip	1 Hand saw			
1 Chisel for metal	1 Pair of compasses	1 Compass saw			
1 Crow-iron	1 Pair cutting nippers	1 Dovetail saw			
6 Files	1 Pair of pincers	1 Iron-back saw			
8 Gimlets	1 Pair of cutting pliers	1 Saw for metal			
1 Glue-pot and brush	1 Pair of flat pliers	1 Scraper			
4 Gouges	1 Pair of round pliers	4 Screw-drivers			
2 Hammers	1 Pair of shears	1 Spokeshave			
1 Hand-vice	2 Planes ; namely,	1 Square			
1 Hatchet	1 Jack plane	Screws, nails, &c.			
The Chest of Birch-wood, the Tools handled in Birch-wood	- - -		6	16	6
1954 —	The Chest of Mahogany, the Tools handled in Hard-wood	- - -	7	17	6
TWENTY-TWO-INCH TOOL CHESTS.					
1955 —	Twenty-two inch Tool Chest, of Beech-wood, with one Drawer and three Trays, containing the following Tools :—				
1 Brace and 12 bits	1 Hatchet	1 Smoothing plane			
8 Brad-awls	1 Mallet	4 Rasps			
4 Brad-punches	1 Marking point	1 Rule			
2 Cutting-punches	1 Oil-can	5 Saws ; namely,			
1 Chalk-line and reel	1 Oilstone in case	1 Hand saw			
7 Chisels ; namely,	1 Oilstone slip	1 Compass saw			
6 Firmer chisels	1 Pair of compasses	1 Dovetail saw			
1 Chisel for metal	1 Pair cutting nippers	1 Iron-back saw			
1 Crow iron	1 Pair of pincers	1 Saw for metal			
8 Files	1 Pair of cutting pliers	1 Scraper			
8 Gimlets	1 Pair of flat pliers	4 Screw-drivers			
1 Glue-pot and brush	1 Pair of round pliers	1 Spokeshave			
4 Gouges	1 Pair of shears	1 Square			
2 Hammers	2 Planes ; namely,	Screws, nails, brads,			
1 Hand-vice	1 Jack plane	&c. &c.			
The Chest of Birch-wood, the Tools handled in Beech-wood	- - -		8	8	0
1956 —	The Chest of Mahogany, the Tools handled in Hard-wood	- - -	9	9	0

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No.	TWENTY-FOUR-INCH TOOL CHESTS.	L s. d.
1957 ——	Twenty-four inch Tool Chest, of Birch-wood, with two Drawers and three Trays, containing the following Tools ; namely :— 1 Bench vice 1 Hand-vice 1 Jack plane 1 Brace, and 18 bits 1 Hatchet 1 Smoothing plane 12 Brad-awls 1 Mallet 6 Rasps 6 Brad-punches 1 Marking point 1 Rule 3 Cutting-punches 1 Oil-can 5 Saws ; namely, 1 Chalk line and reel 1 Oilstone in case 1 Hand saw 7 Chisels ; namely, 1 Oilstone slip 1 Compass saw 6 Firmer chisels 1 Pair of compasses 1 Dovetail saw 1 Chisel for metal 1 Pair cutting nippers 1 Iron back saw 1 Crow iron 1 Pair of pincers 1 Saw for metal 8 Files 1 Pair cutting pliers 1 Scraper 12 Gimlets 1 Pair of flat pliers 6 Screw-drivers 1 Glue-pot and brush 1 Pair of round pliers 1 Spokeshave 6 Gouges 1 Pair of shears 1 Square 2 Hammers 2 Planes ; namely, Screws, nails, &c.	
1958 ——	The Chest of Birch-wood, the Tools handled in Beech-wood - - - The Chest of Mahogany, the Tools handled in Hard-wood - - -	10 10 0 12 12 0

(B.) TOOL CHESTS OF MAHOGANY, FROM 14 TO 24 INCHES LONG, WITH TOOLS INLAID, FOR THE USE OF AMATEURS.

1959 ——	Fourteen-inch tool chest of mahogany, with one tray, the tools handled in hardwood, and neatly inlaid in separate compartments, and the chest French polished	3 13 6
1960 ——	Fourteen-inch tool chest, with one drawer, as above	5 5 0
1961 ——	Sixteen-inch	6 6 0
1962 ——	Eighteen-inch	7 17 6
1963 ——	Twenty-inch	10 10 0
1964 ——	Twenty-two-inch	12 12 0
1965 ——	Twenty-four-inch	14 14 0

(C.) TOOL CHESTS FROM 24 TO 36 INCHES LONG, FOR HOUSEHOLD USE, AND GENERAL PURPOSES.

TWENTY-FOUR-INCH HOUSEHOLD TOOL CHEST.

1966 ——	Twenty-four-inch Household Tool Chest, with two Trays, containing the following Tools ; namely :— 1 Axe 2 Gages ; namely, 1 Rule 1 Bed-wrench with 3 1 Cutting gage 6 Saws ; namely, shifting sockets 1 Marking gage 1 Hand-saw 1 Bill hook 2 Hammers 1 Dovetail saw 1 Brace and 24 bits 1 Mallet 2 Keyhole saws, 4 Brad-awls 1 Oilstone cased and 1 pad 4 Brad-punches 1 Oilstone slip 1 Pruning saw 1 Chalk-line and reel 1 Oil-can 1 Frame saw for 7 Chisels ; namely, 1 Pair of compasses metal 4 Firmer chisels 1 Pair of pincers 1 Saw set 2 Mortise chisels 1 Pair of pliers 1 Scraper 1 Chisel for metal 1 Pair plier punches, 2 Screw-drivers 1 Crow-iron and 6 shifting 1 Striking knife 4 Files and rasps cutters 1 Spokeshave 12 Gimlets 3 Planes ; namely, 1 Vice 1 Glue-pot, glue, and 1 Jack plane 1 Tape measure brush Screws, nails, brads, 2 Gouges 1 Smoothing plane &c. &c. The Chest of Deal, and painted, the Tools handled in Beech-wood	- 11 11 0
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No.	TWENTY-SEVEN-INCH HOUSEHOLD TOOL CHEST.			L. s. d.
1967 —	Twenty-seven-inch Household Tool Chest, with two Trays, containing the following Tools ; namely :—			
	1 Axe	2 Gages ; namely,	1 Trying plane	
	1 Bed-wrench, with 3 shifting sockets	1 Cutting gage 1 Marking gage	1 Rule	
	1 Bill hook	2 Hammers	6 Saws ; namely, 1 Hand saw	
	1 Brace and 24 bits	1 Mallet	1 Dovetail saw	
	6 Brad-awls	1 Oilstone cased	2 Keyhole saws, and 1 pad	
	4 Brad-punches	1 Oilstone slip	1 Pruning saw	
	1 Chalk-line and reel	1 Oil-can	1 Saw for metal	
	7 Chisels ; namely, 4 Firmer chisels	1 Pair of compasses	1 Saw set	
	2 Mortise chisels	1 Pair of pincers	1 Scraper	
	1 Chisel for metal	1 Pair of pliers	2 Screw-drivers	
	1 Crow-iron	1 Pair of plier punches, and 6 shifting cutters	1 Striking knife	
	4 Files and rasps	3 Planes ; namely, 1 Jack plane	1 Spokeshave	
	12 Gimlets	1 Smoothing plane	1 Vice	
	1 Glue-pot and brush		1 Tape measure, 30 ft.	
	3 Gouges		Screws, nails, brads	
	The Chest of Deal, and painted, the Tools handled in Beech-wood			12 12 0
THIRTY-INCH HOUSEHOLD TOOL CHEST.				
1968 —	Thirty-inch Household Tool Chest, with two Trays, containing the following Tools ; namely :—			
	2 Axes	2 Gages ; namely,	1 Trying plane	
	1 Bed-wrench, and 3 shifting sockets	1 Cutting gage 1 Marking gage	1 Rule	
	1 Bill hook	3 Hammers	6 Saws ; namely, 1 Hand saw	
	1 Brace and 30 bits	1 Mallet	1 Dovetail saw	
	6 Brad-awls	1 Oilstone cased	2 Keyhole saws, and 1 pad	
	4 Brad-punches	1 Oilstone slip	1 Pruning saw	
	1 Chalk-line and reel	1 Oil-can	1 Saw for metal	
	10 Chisels ; namely, 6 Firmer chisels	1 Pair of compasses	1 Saw set	
	3 Mortise chisels	1 Pair of pincers	1 Scraper	
	1 Chisel for metal	1 Pair of pliers	3 Screw-drivers	
	1 Crow-iron	1 Pair of plier punches, and 6 shifting cutters	1 Striking knife	
	4 Files and rasps	3 Planes ; namely, 1 Jack plane	1 Spokeshave	
	12 Gimlets	1 Smoothing plane	1 Vice	
	1 Glue-pot and brush		1 Tape measure, 50 ft.	
	4 Gouges		Screws, nails, brads	
	The Chest of Deal, and painted, the Tools handled in Beech-wood			13 13 0
THIRTY-THREE-INCH HOUSEHOLD TOOL CHEST.				
1969 —	Thirty-three-inch Household Tool Chest, with two Trays, containing the following Tools ; namely :—			
	1 Set of augers & pad	1 Crow-iron	1 Pair of compasses	
	1 Axe	6 Files and rasps	1 Pair of pincers	
	1 Bed-wrench, and 3 shifting sockets	12 Gimlets	1 Pair of pliers	
	1 Bill hook	1 Glue-pot & brush	1 Pair of plier punches, and 6 shifting cutters	
	1 Brace and 36 bits	5 Gouges	4 Planes ; namely, 1 Jack plane	
	6 Brad-awls	2 Gages ; namely, 1 Cutting gage	1 Smoothing plane	
	4 Brad-punches	1 Marking gage	1 Trying plane	
	1 Chalk-line and reel	3 Hammers	1 Side fillister	
	14 Chisels ; namely, 9 Firmer chisels	1 Mallet	1 Rule	
	4 Mortise chisels	1 Oilstone cased	6 Saws ; namely,	
	1 Chisel for metal	1 Oilstone slip		
		1 Oil-can		

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No.	THIRTY-THREE-INCH HOUSEHOLD TOOL CHEST—continued.	£	s.	d.
1 Hand saw	1 Saw for metal	1 Spokeshave		
1 Dovetail saw	1 Saw set	1 Vice		
2 Keyhole saws, and 1 pad	1 Scraper	1 Tape measure, 66 ft.		
	3 Screw-drivers	Screws, nails, brads, brass hooks, &c.		
1 Pruning saw	1 Striking knife			
The Chest of Deal, and painted, the Tools handled in Beech-wood				14 14 0

THIRTY-SIX-INCH HOUSEHOLD TOOL CHEST.

- 1970 — Thirty-six-inch Household Tool Chest, with two Trays, containing the following Tools; namely :—

1 Adze	2 Gages ; namely,	1 Rule
1 Set of augers and pad	1 Cutting gage	6 Saws ; namely,
1 Axe	1 Marking gage	1 Hand saw
1 Beak-iron	3 Hammers	1 Compass saw
1 Brace and 36 bits	1 Oilstone cased	2 Keyhole saws,
6 Brad-awls	1 Oil-stone slip	and 1 pad
4 Brad-punches	1 Oil-can and pin	1 Dovetail saw
1 Chalk-line and reel	1 Pair of compasses	1 Frame saw for metal
16 Chisels ; namely, 9 Firmer chisels	1 Pair of pincers	1 Saw set
4 Mortise chisels	1 Pair of plier	1 Scraper
1 Chisel for metal	punches, and 6	3 Screw-drivers
2 Socket chisels	shifting cutters	1 Striking knife
1 Crow-iron	5 Planes ; namely,	1 Spokeshave
6 Files and rasps	1 Jack plane	1 Vice
12 Gimlets	1 Smoothing plane	1 Tape measure, 66 feet long
1 Glue-pot & brush	1 Trying plane	
6 Gouges	1 Side fillister	Screws, nails, brads,
	1 Plough & 8 irons	brass hooks, &c.

(D.) **TOOL CHESTS FROM 30 TO 36 INCHES LONG, FOR THE USE OF JOINERS AND OTHERS.**

THIRTY-INCH JOINERS' TOOL CHESTS.

- 1971 — Thirty-inch Joiners' Tool Chest, with three Trays, and a Till for the Saws, containing the following Tools; namely:—

Saws, containing the following Tools ; namely,	
1 Axe	1 Mortise gage
1 Bevil	1 Hand-vice
1 Brace and 24 bits	2 Hammers
6 Brad-awls	1 Mallet
4 Brad-punches	1 Marking point
1 Center punch	1 Mitre square
1 Chalk-line & reel	1 Oilstone in case
14 Chisels ; namely,	1 Oilstone slip
6 Firmer chisels	1 Pair of compasses
4 Mortise chisels	1 Pair of pincers
2 Socket chisels	1 Fair cutting pliers
1 Bolt chisel	1 Pair of flat pliers
1 Chisel for metal	1 Pair of shears
1 Crow-iron	4 Pencils
1 Drawing knife	21 Planes ; namely,
4 Files	1 Jack plane
6 Gimlets	1 Smoothing plane
1 Glue-pot and brush	1 Trying plane
6 Gouges	1 Tooothing plane
2 Gages ; namely,	1 Plough, & 8 irons
1 Cutting gage	3 Rebate planes
	1 Fillister
	3 Hollows
	3 Rounds
	3 Bed planes
	1 Cock bead plane
	2 Quirk ogee plane
	1 Rule
	8 Saws ; namely,
	1 Hand saw
	1 Compass saw
	1 Dovetail saw
	3 Keyhole saws
	and pad
	1 Sash saw
	1 Saw for metal
	1 Saw set
	1 Scraper
	4 Screw-drivers
	1 Spokeshave
	2 Squares
	Screws, nails, &c.

1 Cutting gage 3 Rebate planes Screws, nails, &c.
The Chest of Deal, and painted - - - - - 16 0

1972 — The Chest of Drawers, lined with Mahogany or Wainscot - - - - 17 10

No.		£	s.	d.
THIRTY-THREE-INCH JOINERS' TOOL CHESTS.				
1973 —	Thirty-three inch Joiners' Tool Chest, with three Trays, and a Till for the Saws, containing the following Tools ; namely :—			
1 Adze	1 Mortise gage	1	Fillister	
3 Augers	3 Hammers	4	Hollows	
1 Axe	1 Hand-vice	4	Rounds	
1 Beak-iron	1 Mallet	1	Astragal plane	
1 Bevil	1 Marking point	4	Bead planes	
1 Brace, and 30 bits	1 Mitre square	1	Cock bead plane	
9 Brad-awls	1 Oilstone in case	1	Ogee plane	
4 Brad-punches	1 Oilstone slip	1	Quirk ogee plane	
1 Center punch	1 Pair of compasses	1	Rule with slide	
1 Chalk-line and reel	1 Pair of pincers	9	Saws ; namely,	
15 Chisels; namely,	1 Pair cutting pliers	1	Hand saw	
6 Firmer chisels	1 Pair of flat pliers	1	Panel saw	
4 Mortise chisels	1 Pair of shears	1	Compass saw	
3 Socket chisels	1 Pair of spring	1	Dovetail saw	
1 Bolt chisel for locks	dividers	3	Keyhole saws	
1 Chisel for metal	1 Pair hand-screws		and pad	
1 Crow-iron	6 Pencils	1	Sash saw	
1 Drawing knife	27 Planes ; namely,	1	Saw for metal	
6 Files	1 Jack plane	1	Saw set	
6 Gimlets	1 Smoothing plane	1	Scraper	
1 Glue-pot, & brush	1 Trying plane	6	Screw-drivers	
6 Gouges	1 Tooothing plane	1	Spirit level	
2 Gages ; namely,	1 Plough,&8 irons	1	Spokeshave	
1 Marking gage	1 Grooving plane	2	Squares	
The Chest of Deal, and painted - - - - -	4 Rebate planes		Screws, nails, &c.	
1974 —	The Chest of Deal, lined with Mahogany, or Wainscot - - - - -	20	0	0
THIRTY-SIX-INCH JOINERS' TOOL CHESTS.				
1975 —	Thirty-six-inch Joiners' Tool Chest, with four Trays, and a Till for the Saws, containing the following Tools ; namely :—			
1 Adze	1 Mortise gage	6	Hollows	
4 Augers	3 Hammers	6	Rounds	
1 Axe	1 Hand-vice	2	Astragal planes	
1 Beak iron	2 Mallets	6	Bead planes	
1 Bevil	1 Marking point	1	Cock bead plane	
1 Brace, with 33 bits, and 2 collars	1 Mitre block	3	Ogee planes	
9 Brad-awls	1 Mitre square	3	Quirk ogee planes	
4 Brad-punches	1 Oilstone in case	1	Compass plane	
1 Center punch	1 Oil-can	11	Saws ; namely,	
6 Carving tools	1 Pair of compasses	1	Hand saw	
1 Chalk-line and reel	1 Pair of pincers	1	Panel saw	
16 Chisels; namely,	1 Pair cutting pliers	1	Table saw	
8 Firmer chisels	1 Pair of flat pliers	1	Compass saw	
4 Mortise chisels	1 Pair hand screws	3	Keyhole saws	
2 Socket chisels	1 Pair of shears		and pad	
1 Bolt chisel	1 Pair springs dividers	1	Sash saw	
1 Chisel for metal	6 Pencils	1	Dovetail saw	
1 Crow-iron	41 Planes ; namely,	1	Screw head saw	
1 Drawing knife	1 Jack plane	1	Turning saw	
6 Files	2 Smoothing planes	1	Saw set	
8 Gimlets	1 Trying plane	1	Scraper	
1 Glue-pot & brush	1 Plough,&8 irons	6	Screw-drivers	
8 Gouges	3 Grooving planes	1	Spirit level	
3 Gages ; namely,	with stops	1	Spokeshave	
1 Cutting gage	4 Rebate planes	3	Squares	
1 Marking gage	1 Fillister		Screws, nails, &c.	
The Chest of Deal, and painted - - - - -		25	0	0
1976 —	The Chest of Deal, lined with Mahogany, or Wainscot - - - - -	27	10	0

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No.		£ s. d.
TOOL CABINET.		
1977 TOOL CABINET	22 inches high, 24 wide, 15 deep, with rising lid, and five drawers, partitioned to contain various assortments of the most useful tools, for the general purposes of mechanical amateurs.	
	The Cabinet of Birch-wood, the Tools handled in Beech-wood. £12 0 0, £16 0 0, £20 0 0, £24 0 0 each.	
	The Cabinet of Mahogany, the Tools handled in Hard-wood. £15 0 0, £19 0 0, £24 0 0, £28 0 0 each.	
	<i>Lists of the contents of the above Cabinets furnished on application.</i>	
TOOL CABINET IN TWO PARTS.		
1978 TOOL CABINET	in two parts, measuring together 5 feet 6 inches high, 22 inches wide, and 11 deep ; with two doors, two drawers, eight shelves, sundry racks and partitions, for containing an assortment of 178 tools, for cabinet work and general purposes, which are inlaid in the doors, drawers, and shelves.	
	The Cabinet of Birch-wood, the Tools handled in Beech-wood - 30 0 0	
	The Cabinet of Mahogany, the Tools handled in Hard-wood - 36 0 0	
	<i>The list of the contents will be furnished on application.</i>	
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1979 TOOL RACKS	in Birch or Mahogany - - - - - <i>The foot</i>	
1980 TRAMMELS	for drawing ellipses. (See No. 1277 to 1280.)	
1981 TROWELS	Brick, Guaging, Pointing, and Plastering Trowels.	
1982 TURNED WORKS.	A variety of highly-finished specimens of turning, in wood and ivory, illustrative of the works that may be executed, by means of the various lathes and apparatus for plain and ornamental turning, manufactured by H. & Co.	
1983 ——	TURNED WORKS in wood, ivory, &c., for useful and ornamental purposes, executed to order.	
1984 ——	TURNED WORKS in metal, &c., for general, mechanical, and scientific purposes, executed to order.	
<hr/>		
1985 TURNING LATHES AND APPARATUS.	These are described at a former part of this Catalogue, under the following heads :—	
COMPLETE LATHES.		
1.	Lathes descriptions one to six, for the general purposes of hand-turning, page 29.	
2.	Lathes descriptions seven to twelve, with traversing mandrels, or traversing tools for screw cutting, and general purposes, page 31.	
3.	Lathes descriptions thirteen to eighteen, with apparatus for plain and ornamental turning in wood, ivory, &c., page 32.	
DETACHED PARTS OF LATHES.		
4.	Mandrels, lathe heads, or headstocks, page 35.	
5.	Chucks for fixing works in the lathe, page 36.	
6.	Chucks or apparatus for ornamenting works in the lathe, page 39.	
7.	Slide rests, principally for ornamental turning in wood and ivory ; with tools and revolving cutters for the same, page 40.	
8.	Slide rests, principally for metal turning ; with tools and revolving cutters for the same, page 42.	
9.	Miscellaneous lathe apparatus, page 43.	
<i>The descriptions are interspersed with various sub-headings and explanatory notes, intended to assist the amateur in the selection of turning machinery. The reader is particularly referred to the notes on pages 28—9, and 34—5.</i>		

			£ s. d.
No.			
1986	TURNING TOOLS of numerous kinds to be used by hand, supplied either in sets or singly ; handles charged extra.		
	(A.) Turning Tools for Soft Wood.		
1987	Gouges - - - - -	The set of 6 tools	0 7 0
1988	Chisels - - - - -	6	0 6 6
1989	Hook tools, for hollowing works - - - - -	3	0 6 0
1990	Broads, for smoothing flat surfaces - - - - -	3	0 6 0
1991	Broads, with stems and disks - - - - -	3	0 12 0
1992	Side tools, for hollowing cylindrical works - - - - -	3	0 9 0
1993	Parting tools - - - - -	3	0 6 0
1994	V Tools, for cutting screws - - - - -	The pair	0 6 0
	(B.) Turning Tools for Hardwood and Ivory.		
1995	Barrel tools - - - - -	The set of 12 tools	0 18 0
1996	Beading tools below $\frac{1}{8}$ inch - - - - -	6	0 9 0
1997	Beading tools from $\frac{1}{8}$ to $\frac{1}{4}$ inch - - - - -	12	0 18 0
1998	Beading tools from $\frac{1}{4}$ to 1 inch - - - - -	6	0 9 0
1999	Bevel tools, right and left - - - - -	6	0 6 6
2000	Drills - - - - -	6	0 4 0
2001	Gouges - - - - -	6	0 7 0
2002	Inside tools - - - - -	3	0 4 6
2003	Left side tools - - - - -	6	0 5 6
2004	Moulding tools - - - - -	24	1 16 0
2005	Parting tools - - - - -	6	0 6 6
2006	Point tools - - - - -	6	0 5 6
2007	Quarter round tools, right and left - - - - -	12	0 12 0
2008	Quarter hollow tools, right and left - - - - -	12	0 18 0
2009	Right side tools - - - - -	6	0 5 6
2010	Round tools - - - - -	6	0 5 6
2011	Screw tools. The set of 12 pairs of H. & Co.'s pitches, Nos. 1 to 12 of Deep Threads - - - - -	The set	1 10 0
2012	Screw tools. The set of 12 pairs of H. & Co.'s pitches, Nos. 1 to 12 of Shallow Threads - - - - -	The set	1 10 0
2013	Screw tools, Nos. 1 2 3 4 5 6 3s. 9d. 3s. 6d. 3s. 3d. 3s. 2s. 9d. 2s. 6d. The pair		
2014	Screw tools, Nos. 7 8 9 10 11 12 2s. 6d. 2s. 4d. 2s. 4d. 2s. 2d. 2s. 1s. 10d. The pair		
	<i>The same screw tools are also used for brass, iron, and steel. Some of the tools, 1995 to 2010, are made thinner than usual, to be used for ivory.</i>		
2015	Tools for turning the Chinese balls, which consist of thin shells, contained one within the other. The balls are carved by hand, with small and appropriate tools, subsequently to their having been separated from within one another in the lathe.		
	(C.) Turning Tools for Brass, generally with rectangular edges.		
2016	Flat tools - - - - -	The set of 6 tools	0 6 6
2017	Point tools - - - - -	6	0 6 6
2018	Round tools - - - - -	6	0 6 6
2019	Square tools - - - - -	6	0 4 0
2020	Milling tools - - - - -	Each	0 2 6
2021	Tools for finishing metal balls. Each tool consists of a steel ring, smaller in diameter than the ball to be turned.		
	(D.) Turning Tools for Iron and Steel, strong, with keen edges.		
2022	Flat tools - - - - -	The set of 6 tools	0 5 6
2023	Gravers - - - - -	6	0 4 6
2024	Hook or heel tools - - - - -	3	0 4 6
2025	Round tools - - - - -	6	0 6 6
2026	Triangular tools - - - - -	6	0 5 6

No.			£	s.	d.
2027	TURNING TOOLS to suit the socket handles, No. 1878. Most of the turning tools, from No. 1986 to 2026, are also made in this manner for the sake of portability, but they are more expensive, and somewhat less convenient for use, than turning tools with ordinary handles.				
TURNING TOOL CUPBOARDS, WITH 36 TOOLS.					
2028	TURNING TOOL CUPBOARD, to hang against the wall, with single door, and containing 36 Tools, half in long handles, and half in short handles ; namely,				
	2 Chisels	2 Right-side tools	2 Point tools for ivory		
	2 Drills	2 Round tools	2 Round tools -		
	2 Gouges	4 Screw tools	2 Flat tools for brass		
	2 Gravers	2 Flat tools for ivory	2 Square tools -		
	2 Parting tools	2 Right-side tools -	2 Round tools -		
	2 Point tools	2 Left-side tools -			
	The Cupboard of Birch-wood, the Tools handled in Beech-wood			4	10 0
2029	The Cupboard of Mahogany, the Tools handled in Hard-wood	-	-	5	10 0
TURNING TOOL CUPBOARDS, WITH 54 TOOLS.					
2030	TURNING TOOL CUPBOARD, to hang against the wall, with single door, and containing 54 Tools, all in short handles ; namely,				
	3 Chisels	3 Right-side tools	3 Point tools for ivory		
	3 Drills	3 Round tools	3 Round tools -		
	3 Gouges	6 Screw tools	3 Flat tools for brass		
	3 Gravers	3 Flat tools for ivory	3 Square tools -		
	3 Parting tools	3 Right-side tools -	3 Round tools -		
	3 Point tools	3 Left-side tools -			
	The Cupboard of Birch-wood, the Tools handled in Beech-wood			5	5 0
2031	The Cupboard of Mahogany, the Tools handled in Hard-wood	-	-	6	6 0
TURNING TOOL CUPBOARDS, WITH 50 TOOLS.					
2032	TURNING TOOL CUPBOARD, to hang against the wall, with double doors, and containing 50 Tools, half in long handles, and half in short handles ; namely,				
	2 Chisels	8 Screw tools	2 Point tools for ivory		
	2 Drills	2 Flat tools for brass	2 Right-side tools -		
	2 Gouges	2 Point tools -	2 Round tools -		
	2 Gravers	2 Round tools -	2 Narrow round tools		
	2 Parting tools	2 Square tools -	for ivory		
	2 Point tools	2 Bevil tools for ivory	2 Flat tools for steel		
	2 Right-side tools	2 Flat tools -	2 Triangular tools for		
	2 Round tools	2 Left-side tools -	steel		
	The Cupboard of Birch-wood, the Tools handled in Beech-wood			6	10 0
2033	The Cupboard of Mahogany, the Tools handled in Hard-wood	-	-	8	0 0
TURNING TOOL CUPBOARDS, WITH 75 TOOLS.					
2034	TURNING TOOL CUPBOARD, to hang against the wall, with double doors, and containing 75 Tools, all in short handles ; namely,				
	3 Chisels	12 Screw tools	3 Point tools for ivory		
	3 Drills	3 Flat tools for brass	3 Right-side tools for		
	3 Gouges	3 Point tools -	ivory		
	3 Gravers	3 Round tools -	3 Round tools -		
	3 Parting tools	3 Square -	3 Narrow round tools		
	3 Point tools	3 Bevil tools for ivory	for ivory		
	3 Right-side tools	3 Flat tools -	3 Flat tools for steel		
	3 Round tools	3 Left-side tools -	3 Triangular tools -		
	The Cupboard of Birch-wood, the Tools handled in Beech-wood			7	7 0
2035	The Cupboard of Mahogany, the Tools handled in Hard-wood	-	-	8	8 0
2036	TURNING Tool Chests, to contain 36 or 72 turning tools, made with rectangular tangs of uniform size, so as to fit into the socket handles, Nos. 1878, or 1879.				
2037	TWEEZERS, various. (See Cutlery, No. 1229.)				

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.		£	s.	d.
2038	UPHOLSTERER'S TOOLS. See Hammers, Needles, Pincers, Scissors, &c.			
2039	VICES of various kinds for grasping works.			
2040	Bench, or tail vices, from 20 to 50 pounds' weight and upwards, such as are used by artizans in general - - <i>The lb. from 6d. to</i>	0	0	10
2041	Bench vices of from 1 to 10 pounds' weight, with levers, and screw clamps, by which they may be fixed to the table ; these are used by watchmakers and others - - - - - <i>Each from 9s. to</i>	1	5	0
2042	Parallel vices, the jaws of which separate in a right line, and therefore remain always parallel ; generally made with screw clamps, having a swivel joint, by which the vice may be inclined at all horizontal angles - - - - - <i>Each from 1l. 10s. to</i>	6	0	0
2043	Parallel vices, with ball and socket joints, to enable them to be inclined vertically as well as horizontally - - - - - <i>Each from 3l. to</i>	6	0	0
2044	Table vices made like hand vices, and with screw clamps for the table - - - - - <i>Each from 7s. 6d. to</i>	0	9	0
2045	Table vices for netting - - - - - <i>Each from 2s. to</i>	0	3	0
2046	Table vices with various joints for making artificial flies for fishing, and which latter may be held at almost every position to the operator - - - - - <i>Each from 10s. to</i>	1	10	0
2047	Hand vices, bright or black, with fly nuts - - - - - <i>Each from 2s. to</i>	0	7	0
2048	Hand vices, with perforated wooden handles, to adapt them to hold long wires - - - - - <i>Each from 4s. 6d. to</i>	0	7	6
2049	Pin vices, some of them perforated for the convenience of holding very small wires - - - - - <i>Each from 3s. to</i>	0	4	6
<i>The best of the above vices have spherical or swivelled washers, to improve the contact of the nut ; and the last three kinds have either wide or cross chaps, like tail vices, or else very narrow chaps, and such are known as dog-nose vices.</i>				
2050	VICE BENCHES of beech or mahogany, with drawers to contain the various tools used for working in metal.			
2051	VICE CLAMPS to prevent the works from being injured by the teeth of the tail vices, or of the bench or parallel vices.			
2052	Vice clamps of iron, copper, brass, or lead, bent to the form of the jaws of vices - - - - - <i>The pair from 1s. to</i>	0	3	0
2053	Vice clamps of metal with joints or springs : upright, sloping, riveting, and other vice clamps - - - - - <i>The pair from 10s. to</i>	2	0	0
2054	Vice clamps of wood, upright, sloping, or jointed <i>The pair from 6s. to</i>	0	10	0
2055	VICE STANDS of cast-iron, made in the form of a tripod, which gives a secure footing to the vice, with ready means of shifting it about to suit the light, or the convenience of work, and with lifting blocks, to alter the height of the vice above the ground <i>Each from 4l. to</i>	5	0	0
2056	WATCHMAKER'S TOOLS. Wheel cutting engines. Upright tools, and others of the specific machines and tools, supplied to order.			
2057	Watchmaker's tools of the smaller and ordinary kinds ; see the respective heads in this Catalogue.			
2058	WHEELS FOR LATHES and machinery.			
2059	Foot WHEELS 24 inches to 30 inches diameter, turned with single, double, or triple series of bevelled grooves, and mounted on wrought iron cranks, from 1½ to 4 feet long - - - - - <i>Each from 3l. 10s. to</i> <i>The crank hooks are included in the charge, but the treadles and center screws are charged extra. Cranks of greater length are made with two throws, or bends.</i>	6	10	0
2060	HAND FLY WHEEL, with grooves, from 8 to 30 inches diameter, with iron spindle working in cast-iron bearings, and mounted on a frame of beech-wood ; the lower part of the pedestal may be screwed to the floor, the upper is mounted on a swing frame, and has two tightening screws and apparatus for adjusting the tension of the band. Handles to serve for one or two men - - - - -	15	0	0

HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.

No.		£ s. d.	
	WHEELS FOR LATHES—continued.		
2061	HAND FLY WHEEL, with five grooves, 8, 16, 24, 32, and 40 inches diameter, similarly mounted in a swing frame of beech-wood, with tightening screws, and two handles	20 0 0	
2062	HAND FLY WHEEL, same as No. 2061, but with a swing frame of iron, with tightening screws	25 0 0	
2063	HAND FLY WHEEL, same as No. 2061, but with a massive cast-iron frame, not provided with the tightening apparatus <i>The last three are sufficiently heavy not to require to be fixed to the floor, and other fly wheels of greater diameter, not exceeding 6 feet, and variously mounted, are also made to order.</i>	25 0 0	
2064	WHEELS AND PINIONS of various kinds, and with any number of teeth, cut to order.		
2065	WILLIS'S (Rev. Professor) CYMAGRAPHs for transcribing the Sections of Architectural mouldings. (See Nos. 1286 and 1287.)		
2066	ODONTAGRAPH for describing the curves proper for the Teeth of Wheels for machinery. On card-board, with Tables, and varnished. (See Appendix C., page 70)	0 5 0	
2067	ORTHOGRAPH, a re-construction of the Pantograph, giving it the greatest facility of motion, and adapting it to Irregular Solids, as well as to Plain Surfaces, such as all objects of natural history, mechanism, and works of art, &c.		
2068	OSTEOLOGICAL LATHE, for the mounting of skeletons. The bones are first fixed in cradles, in the exact relative position they occupy in nature; they are afterwards sawn and drilled for the formation of the artificial joint, with a certainty of the given position being correctly maintained.		
2069	CUTTER BARS, with shifting blades for turning metal. (See No. 1622.)		
2070	TOOL HOLDER, with swivel movement for Slide rests for metal turning, to enable the tool to be grasped firmly at any horizontal angle. (See Nos. 1617 and 1618.)		
2071	VERTICAL OR RECIPROCATING SAW MACHINE. (See No. 1823.)		
2072	WHEEL CUTTING APPARATUS, and Shaping Engine. (See No. 1627.)		
2073	WIRE of brass, iron, and steel, of various sizes, and also annealed iron binding wire, used in tying works together for soldering.		
2074	PINION WIRE, or steel wire, with 6 to 12 leaves, used for making the pinions of clocks and watches.		
2075	WIRE DRAWING PLATES. (See Draw Plates, No. 1241.)		
2076	WOODS. Foreign Hardwoods of the following kinds in the log; namely,		
	African Black-wood*†	Greenheart	Peruvian-wood
	Amboyna	Grenadillo‡	Princes-wood
	Beef-wood	Iron-wood	Purple-wood
	Black Ebony‡	King-wood*	Red Sanders-wood
	Box-wood‡‡	Lignum Vitæ‡	Rosetta-wood
	Brazil-wood	Locust-wood‡	Rose-wood‡
	Brazilletto	Mahogany‡	Sandal-wood
	Bullet-wood*†	Maple-wood	Satin-wood†
	Cam-wood†	Mustaiba	Snake-wood*
	Cocoa-wood‡‡	Olive-tree and root	Tulip-wood*
	Coromandel-wood	Palmyra-wood	Yacca-wood
	Green Ebony‡	Partridge-wood	Zebra-wood
2077	Foreign Hardwoods of most of the above kinds, in pieces 6 to 10 inches long, prepared with the paring knife for the lathe.		
2078	Foreign Hardwoods prepared in the Lathe.		

* Frequently scarce

† Generally close, hard, even tinted, and the more proper for eccentric turning; but others may also be employed.

‡ Generally abundant and extensively used. All the woods may be used for plain turning.

APPENDIX (A.)—TO HOLTZAPFFEL AND CO.'S GENERAL CATALOGUE, 1844.**HOLTZAPFFEL & CO.'S LIST OF TABLE CUTLERY.****A COMPLETE LIST OF GENERAL CUTLERY,**

INCLUDING PEN, POCKET, SPORTSMEN'S, AND OTHER KNIVES; RAZORS, SCISSORS, AND MISCELLANEOUS ARTICLES, WILL BE FOUND ON PAGES 13 TO 16 OF THE GENERAL CATALOGUE.

		Table Knives and Forks The Dosen.	Dessert Knives and Forks The Dosen.	Carving Knives and Forks The Pair.
SHEFFIELD-MADE BLADES.				
Common strong Knives and Forks, in Plain Handles of Bone or Wood, either solid or in halves, and riveted	No. 1— 2— 3— 4— 5— 6— 7— 8—	£. s. d. 0 5 0 0 6 0 0 8 0 0 10 0 0 12 0 0 14 0 0 16 0 0 18 0	£. s. d. 0 8 0 0 10 0 0 12 0 0 14 0 0 16 0 0 18 0	£. s. d. 0 3 0 0 3 6 0 4 0 0 4 6 0 5 0
Plain Shear-steel Knives and Forks, in Handles of good Bone or Stained Horn, either solid, or in halves and riveted	9— 10— 11— 12— 13— 14— 15— 16—	1 0 0 1 2 0 1 4 0 1 6 0 1 8 0 1 10 0 1 13 0 1 16 0	1 0 0 1 0 0 1 0 0 1 2 0 1 8 0 1 0 0 1 4 6 1 6 0	5 6 6 0 6 6 7 0 7 0 7 6 7 6 8 0
Warranted Knives and Forks, in solid Handles of the best Natural Buck or Stag Horn, also in Octagon Handles of Ox Horn, stained black or left plain	17— 18— 19— 20—	2 0 0 2 2 0 3 0 0 3 10 0	1 10 0 1 12 0 2 10 0 3 0 0	0 8 6 0 9 0 0 12 0 0 13 0
Warranted Knives and Forks, in solid Handles of Ivory, either Oval or Octagon	21— 22— 23— 24— 25— 26— 27— 28— 29— 30— 31— 32— 33— 34— 35— 36— 37— 38— 39— 40— 41— 42— 43— 44— 45— 46— 47— 48— 49— 50— 51— 52— 53— 54— 55— 56— 57— 58— 59— 60— 61— 62— 63— 64— 65— 66— 67— 68— 69— 70— 71— 72— 73— 74— 75— 76— 77— 78— 79— 80— 81— 82— 83— 84— 85— 86— 87— 88— 89— 90— 91— 92— 93— 94— 95— 96— 97— 98— 99— 100— 101— 102— 103— 104— 105— 106— 107— 108— 109— 110— 111— 112— 113— 114— 115— 116— 117— 118— 119— 120— 121— 122— 123— 124— 125— 126— 127— 128— 129— 130— 131— 132— 133— 134— 135— 136— 137— 138— 139— 140— 141— 142— 143— 144— 145— 146— 147— 148— 149— 150— 151— 152— 153— 154— 155— 156— 157— 158— 159— 160— 161— 162— 163— 164— 165— 166— 167— 168— 169— 170— 171— 172— 173— 174— 175— 176— 177— 178— 179— 180— 181— 182— 183— 184— 185— 186— 187— 188— 189— 190— 191— 192— 193— 194— 195— 196— 197— 198— 199— 200— 201— 202— 203— 204— 205— 206— 207— 208— 209— 210— 211— 212— 213— 214— 215— 216— 217— 218— 219— 220— 221— 222— 223— 224— 225— 226— 227— 228— 229— 230— 231— 232— 233— 234— 235— 236— 237— 238— 239— 240— 241— 242— 243— 244— 245— 246— 247— 248— 249— 250— 251— 252— 253— 254— 255— 256— 257— 258— 259— 260— 261— 262— 263— 264— 265— 266— 267— 268— 269— 270— 271— 272— 273— 274— 275— 276— 277— 278— 279— 280— 281— 282— 283— 284— 285— 286— 287— 288— 289— 290— 291— 292— 293— 294— 295— 296— 297— 298— 299— 300— 301— 302— 303— 304— 305— 306— 307— 308— 309— 310— 311— 312— 313— 314— 315— 316— 317— 318— 319— 320— 321— 322— 323— 324— 325— 326— 327— 328— 329— 330— 331— 332— 333— 334— 335— 336— 337— 338— 339— 340— 341— 342— 343— 344— 345— 346— 347— 348— 349— 350— 351— 352— 353— 354— 355— 356— 357— 358— 359— 360— 361— 362— 363— 364— 365— 366— 367— 368— 369— 370— 371— 372— 373— 374— 375— 376— 377— 378— 379— 380— 381— 382— 383— 384— 385— 386— 387— 388— 389— 390— 391— 392— 393— 394— 395— 396— 397— 398— 399— 400— 401— 402— 403— 404— 405— 406— 407— 408— 409— 410— 411— 412— 413— 414— 415— 416— 417— 418— 419— 420— 421— 422— 423— 424— 425— 426— 427— 428— 429— 430— 431— 432— 433— 434— 435— 436— 437— 438— 439— 440— 441— 442— 443— 444— 445— 446— 447— 448— 449— 450— 451— 452— 453— 454— 455— 456— 457— 458— 459— 460— 461— 462— 463— 464— 465— 466— 467— 468— 469— 470— 471— 472— 473— 474— 475— 476— 477— 478— 479— 480— 481— 482— 483— 484— 485— 486— 487— 488— 489— 490— 491— 492— 493— 494— 495— 496— 497— 498— 499— 500— 501— 502— 503— 504— 505— 506— 507— 508— 509— 510— 511— 512— 513— 514— 515— 516— 517— 518— 519— 520— 521— 522— 523— 524— 525— 526— 527— 528— 529— 530— 531— 532— 533— 534— 535— 536— 537— 538— 539— 540— 541— 542— 543— 544— 545— 546— 547— 548— 549— 550— 551— 552— 553— 554— 555— 556— 557— 558— 559— 550— 551— 552— 553— 554— 555— 556— 557— 558— 559— 560— 561— 562— 563— 564— 565— 566— 567— 568— 569— 570— 571— 572— 573— 574— 575— 576— 577— 578— 579— 580— 581— 582— 583— 584— 585— 586— 587— 588— 589— 590— 591— 592— 593— 594— 595— 596— 597— 598— 599— 600— 601— 602— 603— 604— 605— 606— 607— 608— 609— 610— 611— 612— 613— 614— 615— 616— 617— 618— 619— 620— 621— 622— 623— 624— 625— 626— 627— 628— 629— 630— 631— 632— 633— 634— 635— 636— 637— 638— 639— 640— 641— 642— 643— 644— 645— 646— 647— 648— 649— 650— 651— 652— 653— 654— 655— 656— 657— 658— 659— 660— 661— 662— 663— 664— 665— 666— 667— 668— 669— 660— 661— 662— 663— 664— 665— 666— 667— 668— 669— 670— 671— 672— 673— 674— 675— 676— 677— 678— 679— 680— 681— 682— 683— 684— 685— 686— 687— 688— 689— 690— 691— 692— 693— 694— 695— 696— 697— 698— 699— 700— 701— 702— 703— 704— 705— 706— 707— 708— 709— 710— 711— 712— 713— 714— 715— 716— 717— 718— 719— 720— 721— 722— 723— 724— 725— 726— 727— 728— 729— 730— 731— 732— 733— 734— 735— 736— 737— 738— 739— 740— 741— 742— 743— 744— 745— 746— 747— 748— 749— 750— 751— 752— 753— 754— 755— 756— 757— 758— 759— 760— 761— 762— 763— 764— 765— 766— 767— 768— 769— 770— 771— 772— 773— 774— 775— 776— 777— 778— 779— 770— 771— 772— 773— 774— 775— 776— 777— 778— 779— 780— 781— 782— 783— 784— 785— 786— 787— 788— 789— 790— 791— 792— 793— 794— 795— 796— 797— 798— 799— 800— 801— 802— 803— 804— 805— 806— 807— 808— 809— 8010— 8011— 8012— 8013— 8014— 8015— 8016— 8017— 8018— 8019— 8020— 8021— 8022— 8023— 8024— 8025— 8026— 8027— 8028— 8029— 8030— 8031— 8032— 8033— 8034— 8035— 8036— 8037— 8038— 8039— 8040— 8041— 8042— 8043— 8044— 8045— 8046— 8047— 8048— 8049— 8050— 8051— 8052— 8053— 8054— 8055— 8056— 8057— 8058— 8059— 8060— 8061— 8062— 8063— 8064— 8065— 8066— 8067— 8068— 8069— 8070— 8071— 8072— 8073— 8074— 8075— 8076— 8077— 8078— 8079— 8080— 8081— 8082— 8083— 8084— 8085— 8086— 8087— 8088— 8089— 8090— 8091— 8092— 8093— 8094— 8095— 8096— 8097— 8098— 8099— 80100— 80101— 80102— 80103— 80104— 80105— 80106— 80107— 80108— 80109— 80110— 80111— 80112— 80113— 80114— 80115— 80116— 80117— 80118— 80119— 80120— 80121— 80122— 80123— 80124— 80125— 80126— 80127— 80128— 80129— 80130— 80131— 80132— 80133— 80134— 80135— 80136— 80137— 80138— 80139— 80140— 80141— 80142— 80143— 80144— 80145— 80146— 80147— 80148— 80149— 80150— 80151— 80152— 80153— 80154— 80155— 80156— 80157— 80158— 80159— 80160— 80161— 80162— 80163— 80164— 80165— 80166— 80167— 80168— 80169— 80170— 80171— 80172— 80173— 80174— 80175— 80176— 80177— 80178— 80179— 80180— 80181— 80182— 80183— 80184— 80185— 80186— 80187— 80188— 80189— 80190— 80191— 80192— 80193— 80194— 80195— 80196— 80197— 80198— 80199— 80200— 80201— 80202— 80203— 80204— 80205— 80206— 80207— 80208— 80209— 80210— 80211— 80212— 80213— 80214— 80215— 80216— 80217— 80218— 80219— 80220— 80221— 80222— 80223— 80224— 80225— 80226— 80227— 80228— 80229— 80230— 80231— 80232— 80233— 80234— 80235— 80236— 80237— 80238— 80239— 80240— 80241— 80242— 80243— 80244— 80245— 80246— 80247— 80248— 80249— 80250— 80251— 80252— 80253— 80254— 80255— 80256— 80257— 80258— 80259— 80260— 80261— 80262— 80263— 80264— 80265— 80266— 80267— 80268— 80269— 80270— 80271— 80272— 80273— 80274— 80275— 80276— 80277— 80278— 80279— 80280— 80281— 80282— 80283— 80284— 80285— 80286— 80287— 80288— 80289— 80290— 80291— 80292— 80293— 80294— 80295— 80296— 80297— 80298— 80299— 80300— 80301— 80302— 80303— 80304— 80305— 80306— 80307— 80308— 80309— 80310— 80311— 80312— 80313— 80314— 80315— 80316— 80317— 80318— 80319— 80320— 80321— 80322— 80323— 80324— 80325— 80326— 80327— 80328— 80329— 80330— 80331— 80332— 80333— 80334— 80335— 80336— 80337— 80338— 80339— 80340— 80341— 80342— 80343— 80344— 80345— 80346— 80347— 80348— 80349— 80350— 80351— 80352— 80353— 80354— 80355— 80356— 80357— 80358— 80359— 80360— 80361— 80362— 80363— 80364— 80365— 80366— 80367— 80368— 80369— 80370— 80371— 80372— 80373— 80374— 80375— 80376— 80377— 80378— 80379— 80380— 80381— 80382— 80383— 80384— 80385— 80386— 80387— 80388— 80389— 80390— 80391— 80392— 80393— 80394— 80395— 80396— 80397— 80398— 80399— 80400— 80401— 80402— 80403— 80404— 80405— 80406— 80407— 80408— 80409— 80410— 80411— 80412— 80413— 80414— 80415— 80416— 80417— 80418— 80419— 80420— 80421— 80422— 80423— 80424— 80425— 80426— 80427— 80428— 80429— 80430— 80431— 80432— 80433— 80434— 80435— 80436— 80437— 80438— 80439— 80440— 80441— 80442— 80443— 80444— 80445— 80446— 80447— 80448— 80449— 80450— 80451— 80452— 80453— 80454— 80455— 80456— 80457— 80458— 80459— 80460— 80461— 80462— 80463— 80464— 80465— 80466— 80467— 80468— 80469— 80470— 80471— 80472— 80473— 80474— 80475— 80476— 80477— 80478— 80479— 80480— 80481— 80482— 80483— 80484— 80485— 80486— 80487— 80488— 80489— 80490— 80491— 80492— 80493— 80494— 80495— 80496— 80497— 80498— 80499— 80500— 80501— 80502— 80503— 80504— 80505— 80506— 80507— 80508— 80509— 80510— 80511— 80512— 80513— 80514— 80515— 80516— 80517— 80518— 80519— 80520— 80521— 80522— 80523— 80524— 80525— 80526— 80527— 80528— 80529— 80530— 80531— 80532— 80533— 80534— 80535— 80536— 80537— 80538— 80539— 80540— 80541— 80542— 80543— 80544— 80545— 80546— 80547— 80548— 80549— 80550— 80551— 80552— 80553— 80554— 80555— 80556— 80557— 80558— 80559— 80560— 80561— 80562— 80563— 80564— 80565— 80566— 80567— 80568— 80569— 80570— 80571— 80572— 80573— 80574— 80575— 80576— 80577— 80578— 80579— 80580— 80581— 80582— 80583— 80584— 80585— 80586— 80587— 80588— 80589— 80590— 80591— 80592— 80593— 80594— 80595— 80596— 80597— 80598— 80599— 80600— 80601— 80602— 80603— 80604— 80605— 80606			

APPENDIX (B.)—TO HOLTZAPFFEL & CO.'S GENERAL CATALOGUE.

A NEW SYSTEM OF SCALES OF EQUAL PARTS,

Applicable to various purposes of ENGINEERING, ARCHITECTURAL, and GENERAL SCIENCE. Illustrated by a fac-simile of the scales on copper-plate. By CHARLES HOLTZAPFFEL. 8vo. cloth, Price 2s. 6d. Published by JOHN WEALE, London. Sold also by HOLTZAPFFEL & Co., Engine, Lathe, and Tool Manufacturers, 64, Charing Cross, and 127 Long Acre, London.

"Mr HOLTZAPFFEL could not have done a better service for the profession, than turning his attention to the construction of scales suitable for their purposes.—We have for many years been in the habit of using scales made of paper, both for estimating and drawing, on account of their convenience.—We have very carefully examined several of the scales, and have much pleasure in testifying their accuracy and utility."—The Civil Engineers' Journal.

HOLTZAPFFEL AND CO.'S.

ENGINE-DIVIDED SCALES,

APPLICABLE TO

Engineering, Architectural, and General Science.

As the least expensive fabric, each scale is ruled in the Dividing Engine, on a different slip of card paper, 18 inches long, the figures and inscription having been previously printed dry. By this arrangement the confusion of crowded scales is entirely avoided, and any of them may be applied directly to the drawing, or compared with one another, without the employment of the compasses. The material of the scales and of the drawing paper being IDENTICAL, they will be found well adapted to the majority of the drawings used in common practice. Numerous experiments on this head are detailed in the pamphlet.

ORDINARY DRAWING SCALES.

A series of 24 scales, containing the usual reductions of the foot, from one sixteenth of an inch to 6 inches to the foot, including three lines of inches, divided into eighths, tenths, and twelfths, and the English foot decimaly divided. Sold also in quarter-sets, or singly.

CHAIN SCALES.

A series of 12 scales in chains and links, namely, 1, 1 $\frac{1}{2}$, 2, 3, 4, 6, 8, 10, 16, 20, 30, 40, chains to the inch : various others, and also scales of chains and miles expressed in feet.

PROPORTIONAL SCALES.

A series of 25 Proportional Scales, for the enlargement and diminution of drawings and models, so as to suit all transpositions of scale, required by the limitation of the drawing paper, the copper plate, or of the materials to be used in the Lathe or otherwise. The series gives 400 distinct and different ratios of proportion, which are given in a tabular form in the Pamphlet.

COMPARATIVE SCALES.

A series of 24 Comparative Scales, by which any length in Berlin, Brussels, English, Florence, French, Leipzig, Lisbon, Munich, Neapolitan, Polish, Rhine land, Roman, Sicilian, Spanish, Swedish, Venetian, Vienna, measures, whether in feet, bracci, palms, inches, or parts, can be transposed on inspection into corresponding quantities, expressed in any other of the linear measures of the series.

The same method is equally applicable to the transposition of the measures, weights, moneys, miles, leagues, &c. of different Countries, and for any of which purposes, scales will be made to order, from the measures of the National Standards given in KELLY'S CAMEST.

A series of 24 Scales for showing the comparative bulk and weights of equal quantities of the metals, woods, stones, and materials principally used in the arts. Contraction Rules, used in making foundry patterns.

Any of the above, and many other Scales (fully described in the Pamphlet), graduated on separate slips of Card Board, 18 inches long, at 9s. the dozen, or separately, at 1s. each. If ruled to order, 2s. each. Cases covered with cloth, for one dozen, 1s. 6d.; for two dozen, 2s. each.

THE LIBRARY, SKETCHING OR POCKET-BOOK SCALE.

A rectangle of card, 4*l* by 2*b*, cut out in the annexed form, and divided on the several edges. It combines the Protractor, and all the usual Scales for Drawing, and it may be used as a set square, or bevel, parallel rule, Marquois Scale, &c. Price, on card, 3s., 4s., 5s., according to the number of graduations.



THE ODONTOGRAPH,

Invented by the Rev. R. WILLIS, A.M., F.R.S., Jacksonian Professor, Cambridge, &c.

This is an instrument of easy application, used for describing the teeth of wheels by circular arcs, so that any two wheels of a set may work truly together. Price of the Odontograph on card and varnished, 5s.

The theoretical explanation of this system of teeth, which has been extensively adopted by practical men, will be found in the Trans. Inst. Civil Engineers, Vol. II., and in Willis's Principles of Mechanism, 18*ii*.

COWPER'S PARLOUR PRINTING PRESS,
MADE ONLY BY HOLTZAPFFEL & CO.,
64, CHARING CROSS, AND 127, LONG ACRE, LONDON.



This little Printing Press is made of mahogany, and stands in the small space of 11 by 8 inches. It is capable of printing a page 7 by 6 inches, and works so easily that a child may use it on the parlour table. A small type-case accompanies it, containing a fonte of about 2500 types, neatly arranged in three drawers with appropriate divisions ; a fourth drawer serves for the furniture, inking tablet, &c. ; and to these are added the necessary tools, so as to render the whole complete. Should it be required, the type-case will contain a duplicate supply of type in addition to that usually furnished, and which doubles the efficiency of the apparatus at a slight additional cost.

The above apparatus is well adapted to the amusement and education of youth, and also to various applications of the inestimable typographic art to the common concerns of mankind.

For example.—Companies, institutions, and individuals, have found it convenient for circular letters, invoices, and papers, subservient to the despatch and methodical arrangement of business ; naturalists and travellers for short memoirs of scientific researches, or labels for specimens ; the friends of education, for disseminating original and other papers ; wood-engravers, for examining the progress of their blocks : practical printers, for proofs of title-pages, stereotype plates, or cards ; and nearly every different pursuit will suggest some new application of this little Press.

LIST OF PRICES.

SECTION I.—COWPER'S PARLOUR PRESSES AND APPARATUS.

	£ s. d.
COWPER'S PARLOUR PRINTING PRESS, with a galley-chase, a box of ink, a composition inking roller, and a distributing tray	1 14 0
SMALL DEAL TYPE CASE, painted, with four drawers ; three of them partitioned to contain an assortment of about 2500 types, and a proportionate supply of leads and brass rule ; the fourth drawer contains reglet, furniture, side and foot sticks, quoins, &c.	2 16 0
SET OF EXTRAS—comprising transfer composing stick, bodkin, forceps, mallet, shooting-stick, planer, brush, and turpentine for cleaning the type, two quires of demy printing paper, cut into suitable sizes for the press, and one pair of damping slates.	0 12 0
GALLEY CHASE seven inches square inside	0 4 0
<i>Total charge for the Plain Parlour Press and Apparatus complete</i>	<u>5 6 0</u>

COWPER'S PARLOUR PRINTING PRESS, japanned and finished in the best manner, and fitted with a drawer, in other respects as above

SMALL MAHOGANY TYPE CASE, with brass lock and handles, in other respects as above

SET OF EXTRAS, comprising Transfer Composing-stick, &c., as above

GALLEY-CHASE seven inches square inside

Total charge for the Best Parlour Press and Apparatus complete

DUPLICATE SET OF 2500 TYPES, and which may be contained in either of the above cases

2 2 0

4 4 0

0 12 0

0 4 0

7 2 0

1 12 0

APPENDIX (C.)—TO HOLTZAPFFEL & CO.'S GENERAL CATALOGUE.

PRICE LIST OF HOLTZAPFFEL & Co.'s PRINTING APPARATUS—
(continued.)

SECTION II.—FOLIO FOOLSCAP PRESSES AND APPARATUS.

FOLIO FOOLSCAP PRINTING PRESS, on the principle of Cowper's Parlour Press, suitable to printing the half sheet of Foolscap, or the quarto sheet of Imperial. External measurement of the press 21 by 11 inches, measurement of the bed 15 by 10 inches, with two iron chases, register points, &c. The press varnished and japanned, complete

LARGE DEAL TYPE CASE, with six drawers, and measuring externally 24 inches by 18, and 11 inches high, with iron handles, lock and key

Four of the drawers are partitioned after the Printer's method for holding 9000 types of the following varieties

GREAT PRIMER, ROMAN Specimen No. 9 viz., capitals, figures, points, spaces, quadrats, &c.

PICA, ROMAN, No. 13; large and small capitals, lower case (small letters), with accented vowels for printing the foreign languages, figures, points, spaces, quadrats, and space line leads, complete.

BOURGEOIS ROMAN, No. 17; capitals, figures, points, spaces, quadrats, &c.

BOURGEOIS ANTIQUE, No. 23; capitals, figures, points, spaces, quadrats, &c.

Two of the drawers contain space line leads, furniture, side and foot sticks, quoins, and reglet; also a mallet, shooting stick, planer, bodkin, printer's composing stick 9½ inches long, brush for cleaning the type, a pair of thick damping slates, &c., all proportioned to the size of the Foolscap Press

Six inch composition inking roller in frame and case

Large box of superfine printing ink

4 14 6

9 9 0

0 10 6

0 8 0

15 2 0

Total charge for the Folio Foolscap Press and Apparatus in the less complete form

FOLIO FOOLSCAP PRINTING PRESS, exactly like the one last described, but with the following additions, namely, an iron bed half an inch thick, planed quite level and true, to increase the permanent accuracy of the Foolscap Press, and an iron counterpoise, to facilitate the working of the same

LARGE DEAL TYPE CASE with eight drawers, similar to the case with six drawers above described, but three inches higher, and containing a considerably greater supply of each of the kinds of type specified in the foregoing description, together with the addition of Great Primer No. 9, lower case letters, Pica Italic No. 14, capitals, lower case letters, points, and spaces, and Bourgeois Antique No. 23, lower case letters, making the total number of types about 17,000; together with a proportionate increase of space line leads, furniture, &c., and with the addition of 21 pieces of brass rule of three varieties, and all 16 inches long

Six inch composition inking roller in frame and case

Large box of superfine printing ink

Composing frame to receive the drawers of the type case when in use

Inclined galley with moveable bottom

Four extra chases, two of them with crosses

7 7 0

16 16 0

0 10 6

0 8 0

1 4 0

0 18 0

0 10 0

27 13 6

Total charge for the Folio Foolscap Press and Apparatus in the more complete form

SECTION III.—CASES FOR ADDITIONAL TYPES.

SMALL TYPE TRAY, 10 by 6 inches, with a selection of about 600 Roman or Italic types of small size, of either of the numbers 17 to 20

The empty type tray

TYPE BOOK 15 by 12 inches, with a selection of about 1500 types, comprising 8 varieties of small types for headings, cards, &c., as described on page 55 of pamphlet

The empty type book

LARGE TYPE TRAY 22 by 24 inches, partitioned after the mode of the printing office, for containing larger quantities of type of any kind; namely, the tray without types

MUSIC TYPE CASE of deal, painted, uniform in size with the Small Deal Type Case described on page 11. The Music Type Case contains four drawers, the whole of which are partitioned to receive an assortment of 2800 music types, of 200 different kinds, as described on page 49 of the pamphlet. The case with music types complete

HAND CHASE, in a painted case, with cushion, roller, ink, and inking tray

The Hand Chase alone

0 15 0

0 5 0

2 2 0

0 12 0

0 7 0

5 15 6

0 15 0

0 7 6

PRINTING APPARATUS FOR THE USE OF AMATEURS.

A pamphlet containing full and practical instructions for the use of COWPER'S PARLOUR PRINTING PRESS, also the description of larger presses on the same principle, and various other apparatus for the Amateur Typographer.—The pamphlet contains likewise, numerous specimens of plain and ornamental types, brass rules, checks, borders, ornaments, corners, arms, &c. &c.

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Specimens of the types separately. Price 6d

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**THE PRINCIPLES OF CONSTRUCTION, ACTION, AND APPLICATION, OF CUTTING
TOOLS USED BY HAND ; AND ALSO OF MACHINES DERIVED
FROM THE HAND TOOLS.**

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PLISHED WITH CUTTING TOOLS.**

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Eccentric Chuck.



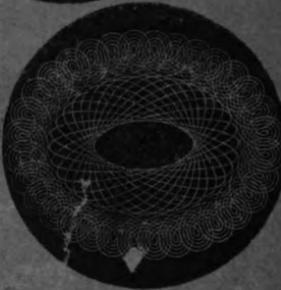
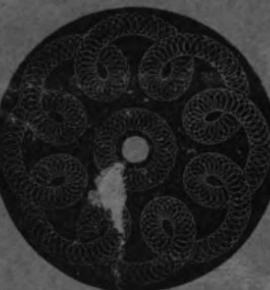
Oval Chuck.



Segment Engine.

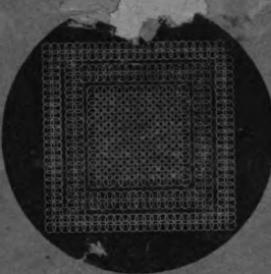


Rose Engine.



In
ometric Chucks.—Parts First, Second, and Third.

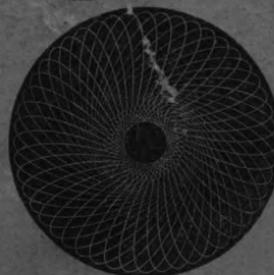
BARTON'S
Compound
Eccentric
Chuck.



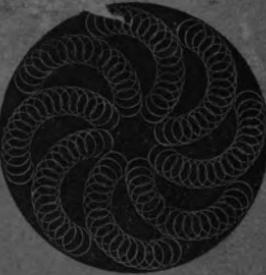
Straight
Line Chuck.



One Oval
and one Eccentric
Movement.



Two Eccentric
Movements.



HOLTZ

HOLTZAPFFEL & Co's Compound Oval and Eccentric Chuck.

